Elevated Attention Problems and Observed Parenting in a Sample of Preschoolers with Autism Spectrum Disorder

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Abstract

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Background. The experience of parenting children with Autism Spectrum Disorder (ASD) is generally understood to encompass higher levels of parenting stress relative to families of typically developing children and, in many instances, when viewed in comparison to children with other disabilities. Emerging evidence suggests that when children with ASD present with elevated attention problems, parents may be more likely to engage in harsh parenting during dyadic interactions (Donnelly, 2015). Despite this, few studies have examined the relationship between attention problems and observed parenting in families of children with ASD, which has been well-described in the literature as a particularly challenging context for parents. This dissertation investigated the relationship between child attention and observed parenting behaviors in a community sample of mothers of children with ASD in early childhood. The extent and nature of this relationship was further explored by observing whether parenting stress and depression played a role in mediating this relationship, and by investigating whether the relationship varied by child behavior and level of functioning. Parenting behaviors were directly observed across three dyadic tasks selected to approximate naturalistic situations in which parents and their children interact. It was hypothesized that increased attention problems would be linked to greater parenting stress, decreased positive parenting, and increased harsh parenting. Increased understanding of how attention problems relate to

parenting within an ASD population will inform the selection and design of interventions uniquely suited to meet the needs of children and their families.

Methods. This sample of 42 mother-child dyads included children with ASD attending a specialized preschool, where they received Applied Behavior Analysis educational programming. Child participants ranged in age from two years, six months to five years, six months, and all diagnostic classifications were corroborated through the Autism Diagnostic Observation Schedule, Second Edition (Lord et al., 2012). Parent and child behaviors during dyadic interactions were video recorded and then coded using the Psychological Multifactor Care Scale — ASD Adapted Preschool Version (Brassard, Donnelly, Hart, & Johnson, 2016). These direct observations of parent and child behavior were used to examine quality of parenting, child negativity toward the mother, and child engagement in tasks during parent-child interactions. Following the interaction, mothers completed a number of self-report measures assessing demographic characteristics, Parenting Stress Index, Fourth Edition, Short Form (PSI-4: SF; Abidin, 2012, maternal depressive symptoms on the PHQ9 (Kroenke, Spitzer, & Williams, 2001), and the Attention Problems scale on the Child Behavior Checklist (Achenbach & Rescorla, 2001). Classroom teachers completed the Communication domain of the Vineland Adaptive Behavior Scales –Third Edition (Vineland-3; Sparrow, Cicchetti, & Saulnier, 2016).

Results. Children with ASD and clinically elevated attention problems (n = 19) had signifiantly lower verbal ability, more CBCL aggression, and their mothers reported signficantly more stress than children with ASD only (n = 23). Observed child engagement was significntly correlated with CBCL attention problems in the overall

sample (r = -.42, p<.01), although the groups (ASD only v. ASD plus elevated attention problems) did not differ significantly (p < .06). Increased attention problems were significantly negatively related to positive parenting in this sample, even when ASD severity and verbal ability were controlled. Although a mediation model failed to support a model where attention problems predicted differences in observed parenting through parenting stress, reverse models showed increased positive parenting predicted decreased child attention problems through its effect on parenting stress. The role of maternal depressive symptoms as a mediator of this relationship was unsupported. Perhaps unsurprisingly, observed child behavior was found to be an important factor in understanding parenting behavior; however, the nature of its role was multifaceted. While observed child negativity was directly linked to lower levels of positive parenting, it moderated the relationship between child attention problems and harsh parenting, as mediated by parenting stress. In particular, attention problems were positively linked to greater stress, but this stress was more likely to be accompanied by a greater increase in harsh parenting behavior when children demonstrated negativity toward their mothers. The relationship between child attention problems and positive parenting varied by child verbal ability. For children with higher verbal ability, attention problems were linked to a drop in positive parenting, while this relationship was unsupported in children with underdeveloped communication skills.

Conclusions. Child attention problems are a powerful predictor of parenting stress and less positive parenting. While it was expected that variation in attention problems would predict differences in parenting, reverse models showed more promise in identifying and defining the relationship between these variables, where mothers who

exhibited more harsh parenting and less positive parenting experienced higher levels of parenting stress and their children demonstrated increased attentional problems and decreased engagement during dyadic interactions. The strength of this relationship varied according to observed child negativity and level of functioning. Clinical implications for practitioners and future directions for research investigating parenting children with ASD are discussed.

Table of Contents

List of Tables and Figures

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Introduction

Parents face a myriad of challenges as their children reach and pass through the years of early childhood. This phase of development is associated with increased mobility, limit testing, and pushing boundaries. Moreover, many children begin formal education during the early childhood years. Given the combined stressors associated with this phase of development, preschool aged children require a high level of attention from parents, which may amount to increased stress. These burdens are heightened for parents of preschool aged children with disabilities relative to their neurotypical peers, given that children with disabilities require a higher level of support to maximize their well-being. This increased support often requires additional financial resources and the devotion of more parental time and energy to meet the needs of the child, often leading to increased parenting stress relative to parents of typically-developing children (Baker, Blacher, Crnic, & Edelbrock, 2002; Baker et al., 2003; Emerson, 2003).

Parenting a child with an autism spectrum disorder (ASD) presents a uniquely challenging task, as these children require a greater investment of time and support given their presenting constellation of characteristics (Bebko, Konstantareas, & Springer, 1987; Davis & Carter, 2008). Children with ASD have difficulty with social communication, which may include atypical initiation or reciprocity of social interactions, deficits in integration or understanding of nonverbal communication behaviors (i.e., eye contact or gestures), and difficulty developing or maintaining social relationships. Social communication deficits are accompanied by restricted or repetitive behaviors or interests, which may be characterized by rigidity, repetitive motor movements, or perseverative interests. Children with ASD may also demonstrate differences in sensory sensitivity or

preferences, as they may avoid or seek out sensory experiences (i.e., peering at, smelling, or mouthing objects). Additionally, ASD is often accompanied by intellectual deficits (American Psychiatric Association [DSM-5], 2013). This constellation of challenges faced by children with ASD is associated with increased parenting stress, depression, and divorce, as well as decreased parenting self-efficacy, when compared to parents of neurotypical children or children with other disabilities (Benson, 2010; Hartley et al., 2010; Hayes & Watson, 2013; Rezendes & Scarpa, 2011).

Similarly, parents of children with symptoms of Attention-Deficit/Hyperactivity Disorder (ADHD) face an increased parenting burden, given that children with clinically elevated inattention and hyperactivity typically demonstrate difficulty staying on task, playing quietly, and waiting their turn (American Psychiatric Association [DSM-5], 2013). The challenges associated with inattention and hyperactivity/impulsivity appear particularly challenging for parents to manage, given that parents of children with ADHD report higher levels of parenting stress related to child factors, compared to parents of children with learning disabilities, autism, developmental delays, and internalizing disorders (Theule, Wiener, Tannock, & Jenkins, 2012). Furthermore, in a large 2008 study conducted in a sample of clinic-referred 5- to 15-year-olds with ADHD, mothers who reported higher levels of depressive symptoms were more likely to engage in corporal punishment (Shin & Stein, 2008), consistent with the significant link between maternal depression and increased harsh parenting (Lovejoy, Graczyk, O'Hare, & Neuman, 2000). Given that increased depression is associated with higher levels of harsh parenting, mothers of children with ADHD, who report higher levels of stress and depression (Brown & Pacini, 1989; Chronis, Lahey, Pelham, Kipp, Baumann, & Lee,

2003; Cunningham & Boyle, 2002; Gross, Shaw, Burwell, & Nagin, 2009; Harvey, Metcalfe, Herbert, & Fanton, 2011; Hughes & Ensor, 2009; Lahey, Piacentini, McBurnett, Stone, Hartdagen, & Hynd, 1988; Margari, Craig, Petruzzelli, Lamanna, Matera, & Margari, 2013; Romano, Kohen, & Findlay, 2010; Shaw, Lacourse, & Nagin, 2005; Theule, Wiener, Tannock, & Jenkins, 2012), may be at increased risk of experiencing decreased mood leading to harsh parenting behavior.

When children have both ASD and ADHD, parents report clinical levels of parenting stress, as well as poorer health, and decreased quality of spousal relationships relative to parents of neurotypical children (Miranda, Tárragara, Fernández, Colomer, & Pastor, 2015; Van Steijn, Oerlemans, Van Aken, Buitelaar, & Rommelse, 2014). Additionally, parents of children with both autism and ADHD report significantly greater parenting stress related to symptoms of inattention and hyperactivity, relative to parents of children with ASD alone (Miranda, Tárragara, Fernández, Colomer, & Pastor, 2015). Moreover, for children with autism and comorbid disorders (primarily ADHD), emerging evidence suggests that parents are more likely to engage in observed negative parenting, relative to parents of children with ASD alone (Donnelly, 2015). In light of this, it is important to examine the factors that influence parenting behaviors in this population, given that the combined presentation of ASD and clinically elevated inattention, hyperactivity/impulsivity may create a unique context for parenting.

Parenting, a complex process that varies widely, is driven by a multitude of variables that interact with one another to influence parenting quality, as well as the well-being of parents and children alike. As per Belsky's determinants of parenting model (Belsky, 1984), these variables can be broadly categorized into three domains. The first

and most influential of these domains is characterized by individual characteristics of parents. In particular, parent developmental history, personality, attachment style, and psychopathology are associated with differences in parenting outcomes (e.g., Belsky, 1984; Pianta, Egeland, & Erickson, 1989; Polansky, 1981; Verhoeven, Junger, van Aken, Dekovic, & van Aken, 2007). The second domain to influence parenting is comprised of child characteristics, such as temperament or presence of a disability. The increased parenting demands experienced by parents of children with disabilities are associated with increased risk of harmful parenting behavior, such as emotional abuse and neglect (Jones et al., 2012; Sedlak et al., 2010). Furthermore, although children without disabilities are more likely to experience any form of maltreatment, children with disabilities in the United States are more likely to experience serious harm as a result of maltreatment, where serious harm refers to injury or suffering that requires treatment by a professional to prevent sustained impairment (Sedlak, et al., 2010). Lastly, the third domain of Belsky's parenting model is comprised of external risk and protective factors, such as socioeconomic status, social support, co-parenting, and self-care (Belsky, 1984). Thus, consideration of factors across these domains helps to organize the complex process of parenting, thereby increasing understanding of parenting as it relates to child and parent well-being. In particular, this study seeks to examine child and parent factors as they influence observed parenting in this sample while controlling for relevant social and contextual factors, namely income.

Given the additional challenges faced by parents of children with disabilities, as well as the possible increased risk of experiencing negative parenting for children with comorbid disorders, the aim of this study is to better understand the child and parent

factors that contribute to the quality of parenting in families of preschool children with autism. The study explores factors related to parent functioning (e.g., parenting stress, depressive symptoms), child functioning (e.g., parent-rated attention problems and aggressive behavior, teacher rated verbal ability, ADOS-2 severity levels, and observed child negativity toward mother), and social characteristics and resources (i.e., income, ethnicity). In particular, the present study seeks to examine those factors that contribute to parenting quality of children as they relate to increased child ADHD symptoms, as reported by parents, relative to children with autism alone.

ADHD Symptoms and Externalizing Behavior

The symptoms of attention-deficit/hyperactivity disorder (ADHD) have been examined in the literature in two ways: by clinical diagnosis or by level of symptoms, often captured by parent-report using the Achenbach System of Empirically Based Assessment (ASEBA) Child Behavior Checklist (CBCL; Achenbach, 2009), a measure with extensive evidence of reliability and validity assessing attention problems and externalizing behavior in young children (Achenbach, 2009). While some studies examining parenting in families of children with ADHD examine group differences in parent factors (i.e., parenting stress, maternal depression), where parents of children with a clinical diagnosis of ADHD are compared to parents of a reference group of children (Baker & McCal, 1995; Breen & Barkley, 1988; DuPaul, McGoey, Eckert, & Van Brakle, 2001; Lee, Lin, Robson, Yang, Chen, & Niew, 2013), other studies investigate parent wellbeing in relation to behavior and symptom severity, using parent ratings on symptom checklists or rating scales (Dietz, Jennings, Kelley, & Marshal, 2009; Mash &

Johnston, 1983; Peters-Scheffer, Didden, & Korzilius, 2012; Podolski & Nigg, 2001; Vaughan, Feinn, Bernard, Brereton, & Kaufman, 2013).

Given that ADHD is most commonly identified in elementary age children (American Psychiatric Association [DSM-5], 2013), restricting the examination of ADHD symptoms to a clinical diagnosis may not be appropriate in a preschool sample. Clinically, the most distinctive feature in preschoolers is hyperactivity (American Psychiatric Association [DSM-5], 2013). These behaviors, such as difficulty remaining seated and fidgeting, are captured by the attention problems scale of the CBCL 1.5-5 (Achenbach & Rescorla, 2001). This empirically-based measure was initially developed using findings from epidemiological data; consultation with expert populations, including clinicians, researchers, and the parents of preschool-age children; and review of relevant research (Achenbach, 2009). As per the manual, all items on the CBCL significantly discriminate between referred and nonreferred preschoolers, with the exception of two items related to food refusal and unkempt appearance. Thus, the overall measure demonstrates high criterion validity. The attention problems scale on the preschool version of the CBCL discriminates well between referred and nonreferred children, where children scoring above the normal range (i.e., in the borderline and clinical ranges) were five times more likely to be in the referred sample than those in the normal range in an investigation of the relationship between problem scales and referral status using odds ratio analyses (Achenbach & Rescorla, 2001). Thus, the attention scale also demonstrates strong criterion validity. Additionally, ratings of attention problems on the CBCL/1½ -5 scales appear to capture long-term patterns of inattentive and hyperactive behavior, since parent ratings of attention problems in children at age three are significantly positively

correlated with parent ratings of attention problems at ages four through nine (Achenbach & Rescorla, 2001). This scale also demonstrates high sensitivity (sensitivity=98.1) in discriminating between children with and without ADHD (Tripp, Schaughency, & Clarke, 2006). Genetic findings also lend support to the use of the CBCL 1.5-5 to assess attention problems, as high heritability has been observed for attention problems rated on the CBCL across multiple large, mono- and dizygotic twin studies in multiple countries (Hudziak, Rudiger, Neale, Heath, & Todd, 2000; Rietveld, Hudziak, Bartels, van Beijsterveldt, & Boomsma, 2004). Therefore, the latter method of examining ADHD symptoms was determined to be the most appropriate in the current study.

Parenting Stress

Parenting stress refers to a complex, aversive psychological process wherein parent well-being and behavior, parent-child relationship quality, psychosocial adjustment of the child, and the demands of parenting interact with one another to create the experience of negative feelings toward the self and child (Deater-Deckard, 1998). A large body of research has examined this variable using the Parenting Stress Index (PSI; Abidin, 2012) in parents of children with autism (Brobst, Clopton, & Hendrick, 2009; Davis & Carter, 2008; Dunn, Burbine, Bowers, & Tantleff-Dunn, 2001; Hoffman, Sweeny, Hodge, Lopez-Wagner, & Looney, 2009; Kasari & Sigman, 1997; Keenan, Newman, Gray, & Rinehart, 2016; Lecavalier, Leone, & Wiltz, 2006; McStay, Dissanayake, Scheeren, Koot, & Begeer, 2014; Pastor-Cerezuela, Fernandez-Andres, Tarraga-Minguez, & Navarro-Peña, 2016; Quintero & McIntyre, 2010; Rao, & Beidel, 2009; Rivard, Terroux, Parent-Boursier, & Mercier, 2014; Siu, Yi, Chan, Chio, Chan, & Mak, 2019; Takahashi, Adachi, Takayanagi, Yasuda, Tanaka, Osato-Kaneda, Masuda,

Nakai, Saito, Kuribayashi, & Nakamura, 2017; Tomanik, Harris, & Hawkins, 2004; Wolf, Noh, Fisman, & Speechley, 1989; Zaidman-Zait, Mirenda, Zumbo, Georgiades, Szatmari, Bryson, Fombonne, Roberts, Smith, Vaillancourt, Volden, Waddell, Zwaigenbaum, Duku, & Thompson, 2011; Zaidman-Zait, Mirenda, Zumbo, Wellington, Dua, & Kalynchuk, 2010) and in parents of children with ADHD (Anastopoulos, Guevremont, Shelton, & DuPaul, 1992; Baker, 1994; Baker & McCal, 1995; Breen & Barkley, 1988; Byrne, DeWolfe, & Bawden, 1998; DuPaul, McGoey, Eckert, & Van Brakle, 2001; Goldstein, Harvey, & Friedman-Weieneth, 2007; Harrison & Sofronoff, 2002; Harvey, 1998; Mash & Johnston, 1983; Podolski & Nigg, 2001; Ross, Blanc, McNeil, Eyberg, & Hembree-Kigin, 1998; Theule, Wiener, Rogers, & Marton, 2011; Treacy, Tripp, & Baird, 2005; Van der Oord, Prins, Oosterlaan, & Emmelkamp, 2006; Vitanza and Guarnaccia, 1999; Yang, Jong, Hsu, & Tsai, 2007). The PSI-4-SF is a self-report rating scale assessing parenting stress using Likert-type items across child and parent domains. On the long form of this inventory, the six subscales comprising the child domain assess parenting stress related to child characteristics, including distractibility/hyperactivity, adaptability, reinforces parent, demandingness, mood, and acceptability. The parent domain includes seven subscales assessing depression, sense of competence, role restriction, isolation, attachment, health, and spousal support. On the abbreviated short-form, used in the current study, item endorsements produce scores in three domains: parental distress, parent-child dysfunctional interaction, and difficult child. A total stress score of overall parenting stress is also obtained using the PSI-4 SF.

For families of children with ASD, a comprehensive literature review found that parenting stress is significantly higher relative to families of typical children, as well as in

comparison to children with other developmental disabilities, such as intellectual disability and Down syndrome, but not ADHD (Hayes & Watson, 2013). In this meta-analysis, only one of fifteen studies investigated parenting stress of parents of children with ASD relative to a comparison group of children with ADHD, and results of the study were nonsignificant for differences in parenting stress.

Increased severity of autism symptoms predicts increased parenting stress. In a study examining the ways in which parenting stress is associated with autism symptomatology, Pastor-Cerezuela, Fernandez-Andres, Tarraga-Minguez, and Navarro-Peña (2016) found that parents of children with ASD report feeling less competent, more isolated, in poorer health, and more stressed due to role restriction, relative to parents of typically developing children. The authors investigated parenting stress in a sample of 84 families of children ranging in age from five to eight years, where half of the participating children carried clinical diagnoses of ASD (n=42), substantiated by elevated scores on the Gilliam Autism Rating Scale, Second Edition (GARS-2; Gilliam, 2006) and the remaining participants formed a comparison group with no diagnoses (n=42). Autism severity was measured using parent report on the GARS-2, and parenting stress was evaluated using the PSI, third edition (PSI-3). As per the results of this study, parents who reported a higher level of autism symptoms on the GARS-2 were more likely to report higher stress related to their perceptions of their child's behavior, particularly in the areas of child distractibility and hyperactivity (r=.47, p=.002; Pastor-Cerezuela, Fernandez-Andres, Tarraga-Minguez, & Navarro-Peña, 2016). Furthermore, parenting stress reached clinically significant levels in the ASD group, and stress was significantly higher among these parents relative to comparison parents.

This finding was corroborated by Hoffman, Sweeney, Hodge, Lopez-Wagner, and Looney (2009) whose investigation indicated that ASD symptom severity is associated with increased parenting stress in both the parent (r=.27, p<.01) and child domains (r=.33, p<.001) in mothers, where the autism index score on the Gilliam Autism Rating Scale, Second Edition (GARS-2) was used as the measure of ASD severity. Although the use of parent report to evaluate both symptom severity and parenting stress may inflate the correlation between these two variables, group differences are still observed with regard to increased parenting stress in families of children diagnosed with ASD using gold-standard instruments (i.e., ADOS-2, ADI-R) relative to comparison groups (Estes, Munson, Dawson, Koehler, Zhou, & Abbott, 2009). Related social and behavioral functioning are also linked to parenting stress in parents of young children with autism. Specifically, decreases in parent-reported child social relatedness and increases in child dysregulation, in combination with maternal depression, predict higher levels of parenting stress in mothers of toddlers with ASD (Davis & Carter, 2008).

Verbal skills also play a role in predicting parenting stress in this population, as parents of children with autism report significantly greater parenting stress in the child domain as verbal ability decreases (Pastor-Cerezuela, Fernandez-Andres, Tarraga-Minguez, & Navarro-Peña, 2016). Specifically, as verbal skills decrease, parents report greater levels of parent stress related to parent-reported child factors, such as distractibility and hyperactivity (r=-.45, p=.003), adaptability (r=-.43, p=.004), and demandingness (r=-.49, p=.001). In sum, a review of the literature reveals that parents of preschoolers with autism report higher levels of parenting stress, particularly in the domain of child-related factors, when compared to parents of typically developing (TD)

children. When parents see their children as having greater social communication deficits, diminished social-emotional reciprocity with others, and heightened restricted and repetitive behaviors or interests, they express a number of concomitant forms of stress. Parents of children with ASD describe feeling less competent as parents, experience greater feelings of isolation from others, report being in poorer health due to parenting stress, and feel more restricted to their role as parents relative to parents of neurotypical children (Pastor-Cerezuela et al., 2016).

Parents of children with clinically elevated attention problems, including those diagnosed with ADHD, similarly report increased parenting stress. The results of a comprehensive review of the literature conducted by Theule, Wiener, Tannock, and Jenkins (2012) indicate that parents of children with ADHD experience a significantly higher level of parenting stress relative to typically developing children, where increased symptom levels, assessed using diagnostic groups based on DSM criteria or a standardized rating scale, such as the ADHD Rating Scale (DuPaul, 1991) or the CBCL (Achenbach & Edelbrock, 1983), are significantly associated with greater parenting stress. Furthermore, parents of children with ADHD report experiencing more parenting stress than parents of children with other disabilities, including learning disabilities, autism, developmental delays, and internalizing disorders (Baker & McCal, 1995; Theule, Wiener, Tannock, & Jenkins, 2012). This increase in stress is associated with greater levels of ADHD symptoms and increased number of settings in which problem symptoms occur, as well as differences in parent and contextual factors, including increased parent psychopathology and decreased levels of perceived parental control over child behaviors, financial resources, and social support (Anastopoulos, Guevremont,

Shelton, & DuPaul, 1992; Baldwin, Brown, & Milan, 1995; Beck, Young, & Tarnowski, 1990; Breen & Barkley, 1988; Harrison & Sofronoff, 2002; Theule, Wiener, Rogers, & Marton, 2011).

Thus, when children present with the patterns of difficulty regulating their attention and behavior that characterize ADHD, parents describe their experience as uniquely stressful, expressing levels of parenting stress that exceed those reported by parents of children with a myriad of other developmental and psychological differences. As the number of symptoms increase, parenting stress becomes more pronounced. Furthermore, parents express heightened stress when their children's symptoms appear across a greater number of settings (i.e., home, school, public places). When parents perceive themselves as having less control over their child's behavior, stress also increases. Additionally, parents who experience impaired psychological wellbeing, such as those with psychopathology, describe experiencing greater parenting stress when caring for their child with ADHD. Decreased access to financial resources and social support has also been linked to higher levels of stress among parents of children with ADHD. Overall, parents of children with ADHD express feelings of substantially greater stress relative to parents of children presenting with a range of differences in developmental and psychological functioning.

When children present with symptoms of both ASD and ADHD, the complexities of child factors increase the demands of parenting. In a study examining stress in parents of children with autism (n=23), ADHD (n=42), comorbid ASD and ADHD (n=21), and typically developing peers (n=35), a large majority (approximately 76%) of parents of children with both autism and ADHD reported clinical levels of parenting stress

(Miranda, Tárragara, Fernández, Colomer, & Pastor, 2015). The 121 children in this study sample ranged in age from 5 to 9 years old and demonstrated an IQ of greater than 70. Participants were assigned to groups based upon a clinical diagnosis using *DSM-IV-TR* criteria, where the comparison group included children without any clinical diagnoses (American Psychiatric Association, 2000). Parent endorsements on the PSI-3 were used to measure parenting stress across a number of areas in the child and parent domains. Parents of children with autism, ADHD, or both all reported significantly greater parenting stress related to child behavior, relative to parents of children in the comparison group. Thus, preliminary evidence appears to suggest that overall levels of stress may be similar across parents of children with ASD, ADHD, or both. However, parents of children with comorbid autism and ADHD reported significantly more stress than parents of autism alone, with regard to stress due to distractibility and hyperactivity. Moreover, in the parent domain, parents of children with both autism and ADHD reported greater parenting stress related to health problems and their spousal relationship relative to the comparison group, while this difference was not significant for parents of ASD- or ADHD-only children relative to comparison group parents.

A similar study investigated stress and depression in parents of children with autism, ADHD, or both, demonstrating similar results with regard to roughly equivalent levels of parenting stress across these three diagnostic groups. In a sample of 174 families participating in two larger ASD and ADHD genetic studies (Van Steijn, Oerlemans, Van Aken, Buitelaar, & Rommelse, 2014), parents of children with one or both of the two diagnoses rated their parenting stress on the PSI twice: once with regard to the participating child and once with regard to a neurotypical sibling of the child. Parents of

these families reported significantly greater stress related to parenting their children with autism and/or ADHD relative to parenting their typically developing children.

In summary, there is a strong base of literature demonstrating a link between ASD and greater parenting stress, where clinical ASD diagnosis and increased severity of child ASD symptoms are associated with higher levels of stress (Davis & Carter, 2008; Estes, Munson, Dawson, Koehler, Zhou, & Abbott, 2009; Hayes & Watson, 2013; Hoffman, Sweeny, Hodge, Lopez-Wagner, & Looney, 2009; Kasari & Sigman, 1997; Pastor-Cerezuela, Fernandez-Andres, Tarraga-Minguez, & Navarro-Peña, 2016). Heightened parenting stress may also be related to verbal skills in this population, where decreased levels of verbal skills have been correlated to greater stress related to child distractibility and hyperactivity, adaptability, and demandingness (Pastor-Cerezuela, Fernandez-Andres, Tarraga-Minguez, & Navarro-Peña, 2016). Overall, levels of parenting stress in parents of children with ASD are significantly elevated when compared typically developing children, as well as children with other developmental disabilities (Hayes & Watson, 2013). However, parents of children with ADHD report even greater levels of parenting stress (Theule, Wiener, Rogers, & Marton, 2011).

With regard to parenting children with ADHD, greater parenting stress has been linked to a number of variables across the following domains: a) child factors, such as higher symptom levels and increased number of symptom settings, b) parent factors, including greater parent psychopathology and decreased perceived control over child behaviors, and c) social and contextual factors, such as lower social support and fewer financial resources (Anastopoulos, Guevremont, Shelton, & DuPaul, 1992; Baldwin, Brown, & Milan, 1995; Beck, Young, & Tarnowski, 1990; Breen & Barkley, 1988;

Harrison & Sofronoff, 2002; Theule, Wiener, Rogers, & Marton, 2011). Overall findings show higher levels of parenting stress when compared to parents of children with learning disabilities, internalizing disorders, developmental delays, and autism (Baker & McCal, 1995; Theule, Wiener, Tannock, & Jenkins, 2012). Taken together, these findings alert researchers and clinicians to the increased risk of experiencing parenting stress for parents of children with clinically elevated attention problems.

The literature investigating parenting stress in parents of children with both ASD and ADHD is advancing, and early findings suggest that a majority of parents in this population are burdened by clinical levels of parenting stress (Miranda, Tárragara, Fernández, Colomer, & Pastor, 2015). Some evidence suggests that increased attention problems may uniquely predict increased parenting stress in parents of children with ASD (Peters-Scheffer, Didden, & Korzilius, 2012). Furthermore, emerging evidence suggests that increased parenting stress may influence observed quality of parenting in families of preschoolers with ASD (Johnson, 2019), while another study demonstrated that parents of children with comorbid autism and ADHD were more likely to engage in harsh parenting (Donnelly, 2015). Therefore, there is preliminary support that the following relationships between child characteristics, parent factors, and observed quality of parenting in parents of children with ASD: a) attention problems appear to be linked to greater parenting stress (Peters-Scheffer, Didden, & Korzilius, 2012), b) clinically elevated attention problems may be related to differences in observed quality of parenting (Donnelly, 2015), and c) parenting stress appears to predict variance in observed parenting (Johnson, 2019). However, few studies have examined observed parenting in families of children with ASD and ADHD, discussed below. Since parents of children

with greater attention problems report experiencing high levels of stress, and since increased parenting stress may predict differences in parenting behavior, the current study seeks to add to the literature by exploring the possible role of parenting stress as it relates to attention problems and observed parenting behavior in mothers of young children with ASD.

Maternal Depressive Symptoms

Mothers of children with ASD report experiencing increased depressive symptoms relative to those with typically developing children, with higher autism symptom severity predicting worsened depression (Jeans, Santos, Laxman, McBride, & Dyer, 2013; Benson, 2006). Additionally, for children with ASD and increased maladaptive behaviors (i.e., noncompliance, hyperactivity), mothers report increased levels of depressive symptoms, regardless of the level and quality of their self-reported coping skills (Benson, 2010). In other words, when maternal coping skills are controlled for, greater behavioral problems were associated with increased depressive symptoms in mothers of children with ASD. As such, it is important to examine maternal depression in this population, particularly given that children with ASD are more likely to demonstrate externalizing behaviors than are their typically developing peers (Eisenhower, Baker, & Blacher, 2005). Based on these findings in the literature, when children have difficulties in the realm of social communication, social-emotional reciprocity, and present with behaviors and interests that are repetitive or restrictive in nature, parents express feeling more depressed mood. At times, the rigidity, restricted interests, and sensory preferences or sensitivities, as well as the decreased functional communication, that may be experienced by chidlren with ASD are accompanied by difficult behaviors, which have

also been linked to depressive symptoms in parents. Thus, depressive symptoms appear to be directly linked to parents' experience of their children's ASD symptoms and related behavior problems.

Likewise, there is a well founded association between attention problems and maternal depression, where increased attention and related externalizing behavior problems (i.e., hyperactivity, impulsivity, oppositionality) are linked to increased levels of maternal depression (Brown & Pacini, 1989; Chronis, Lahey, Pelham, Kipp, Baumann, & Lee, 2003; Cunningham & Boyle, 2002; Gross, Shaw, Burwell, & Nagin, 2009; Harvey, Metcalfe, Herbert, & Fanton, 2011; Hughes & Ensor, 2009; Lahey, Piacentini, McBurnett, Stone, Hartdagen, & Hynd, 1988; Margari, Craig, Petruzzelli, Lamanna, Matera, & Margari, 2013; Romano, Kohen, & Findlay, 2010; Shaw, Lacourse, & Nagin, 2005). Overall findings in the literature portray a positive association between child attention problems and parental depressive symptoms. It is possible that this relationship is reciprocal, where children of parents with psychopathology are more likely to demonstrate developmental differences and parents of children with attention problems are more likely to experience stressful and repeated challenges in the realm of parenting that contribute to depressed or irritable mood over time. It is also possible that an unexamined third variable contributes to both parent depressive symptoms and child attention problems, such as having a history of trauma or living with a co-parent who uses substances. Nonetheless, a positive link has been established in the literature, where parents of children with attention problems report experiencing greater depressive symptoms.

In a 1989 study conducted by Brown and Pacini with a sample of 85 children ranging in age from 5 to 13 years referred to an outpatient clinic, parents' self-report of depression symptoms were compared across three groups: families of children with a clinical diagnosis of ADHD, families of clinic-referred children who did not meet criteria for ADHD, ODD, or CD, and nonclinical controls. Results of this study indicated that in this sample, mothers and fathers of children with ADHD reported significantly more depressive symptoms relative to parents of clinical and nonclinical controls.

Similar results were observed in a study examining parent psychopathology in 30 families of children with ADHD relative to 68 families of children with ADHD plus a behavior disorder (i.e., ODD and/or CD) and a comparison group of 116 children who carried none of these diagnoses (Chronis, Lahey, Pelham, Kipp, Baumann, & Lee, 2003). Mothers rated depressive symptoms on the Beck Depression Inventory (BDI; Beck et al., 1961). As per parent endorsements on the BDI, mothers of children with ADHD and comorbid ADHD and behavioral disorders were significantly more likely to have a lifetime history of depression relative to comparison group mothers, with no significant difference between the ADHD and ADHD+ODD/CD groups.

These findings are corroborated by Cunningham and Boyle (2002), who conducted a study assessing parent and child functioning in families of preschool-age children (mean age=57 months) with elevated parent or teacher ratings of child ADHD symptoms (n=24), ODD symptoms (n=18), or both ADHD and ODD symptoms (n=52) relative to typical peers (n=35). Participants were assigned to groups using parent and teacher ratings on the Disruptive Behavior Disorders Scale (Pelham, Gnagy, Greenslade, & Milich, 1992), and parent ratings of attention problems on the CBCL significantly

differed across groups with and without ADHD. Maternal depressive symptoms, measured using self-endorsements on the BDI, was significantly higher in families of children with ADHD relative to those of children without ADHD, where the ODD and typically developing groups did not significantly differ. Thus, considerable evidence supports a positive association between clinically elevated attention problems and maternal depression. Furthermore, in a longitudinal study conducted by Chronis et al. (2007) in a sample of children ranging in age from 46 months to seven years at the time of recruitment, children with ADHD whose mothers had a history of depression were more likely to demonstrate increased level of conduct problems across time. Thus, for mothers who experience depressive symptoms, children may be at higher risk to develop additional behavioral difficulties, which further add to the complexities of parenting. Furthermore, parent psychopathology, in particular maternal depression, is known to be related to differences in parenting (Belsky, 1984; Errázuriz Arellano et al., 2012). As such, maternal depressive symptoms will also be examined in the current study.

Observed Quality of Parenting

Parenting is assessed in the literature in two primary ways: parent self-report and direct observation during parent-child interactions. Although there are practical advantages to measuring parenting by rating scale endorsements, by potentially reducing required resources such as participants (i.e., child participants), physical space (i.e., play room), materials (i.e., toys), and time (i.e., extended intervals during which interactions are observed), there is evidence to suggest that observing behavior is essential to understanding parenting. In the case of maltreatment, mothers may be unable to reflect accurately on their own behavior due to insufficient access to cognitive and emotional

resources (Brassard, Hart, & Hardy, 1993). Furthermore, parent self-report on rating scales may be influenced by a tendancy to provide socially desirable responses to items. The use of observed parent-child dyadic interactions has historically demonstrated strong predictive validity in both developmental and maltreatment research (Bakeman & Brown, 1980; Brassard, Hart, & Hardy, 1993; Patterson, Reid, & Dishion, 1992).

Observed parenting provides unique information regarding parenting behavior in families of children with ASD as well (Blacher, Baker, & Kaladjian, 2012; Boonen et. al, 2015; Donnelly, 2015). For instance, Boonen and colleagues (2015) examined parenting behavior by self-report and direct observation in 69 parent-child dyads consisting of mothers and their children, who ranged in age from seven to eleven years. Thirty of the children in this sample had a confirmed clinical diagnosis of ASD, while 39 typically-developing children formed a comparison group. When the two measures of parenting behavior were compared to one another, correlations were generally nonsignificant or weak. When diagnostic groups were compared, mothers of children with autism demonstrated significantly lower levels of observed sensitivity and structure, relative to the comparison group. When parenting behavior was measured by self-report, however, group differences were only observed for material rewarding, where mothers of children with ASD reported significantly more frequent use of material rewarding relative to comparison mothers. Thus, although unique information is obtained by each method of assessing parenting behavior, observed parenting may provide increased understanding of parent functioning and parent-child interactions relative to self-report data (Blacher, Baker, & Kaladjian, 2012; Boonen et. al, 2015; Donnelly, 2015).

Parenting and Autism

The complex process of parenting is driven in part by child factors, including presence of a disability (Belsky, 1984). Studies examining parenting behavior and parent-child interactions in families of children with autism have illuminated some key differences in observed parenting related to autism diagnosis and autism severity. In a sample of 25 dyads composed of children with ASD between age 4-14 years and their primary caregiver (80% mothers), autism severity was significantly associated with decreased parent-child interaction quality (Beurkens, Hobson, & Hobson, 2013). In particular, increased ADOS severity scores predicted decreased coordination, communication, emotional expression, responsivity, and mood, suggesting that increased autism symptom severity interferes with quality of parent-child interactions during play.

A similar study examined the relationship between autism symptom severity and parent-child interactions in a sample of 151 parent-child dyads including children with a confirmed ASD diagnosis between the ages of 24 and 59 months (Hudry, Aldred, Wigham, Green, Leadbitter, Temple, Barlow, & McConachie, 2013). Corroborating the findings of Beurkens, Hobson, and Hobson (2013), the results of this study demonstrated that increased autism symptom severity was associated with decreased quality of parent-child interactions (Hudry, Aldred, Wigham, Green, Leadbitter, Temple, Barlow, & McConachie, 2013). Specifically, ADI algorithm scores in the communication domain and ADOS algorithm scores in the social interaction and repetitive behavior domains were significantly correlated with a lower proportion of interactions initiated by the child and decreased portion of time engaged in shared attention. Additionally, increased restrictive and repetitive behavior and interests (RRBIs), indicated by ADOS repetitive

behavior domain scores, were significantly associated with decreased parent synchrony, operationally defined as the portion of parent communication behaviors that are aligned with the attentional focus of the child in a given moment, where asynchrony refers to placing demands or directing or redirecting the child's attention.

In the same study (Hudry, Aldred, Wigham, Green, Leadbitter, Temple, Barlow, & McConachie, 2013), verbal ability, assessed using the British adaptation of the Preschool Language Scales (PLS; Zimmerman, Steiner & Pond, 1997), and nonverbal ability, measured using the average of the visual reception and fine motor scales of the Mullen Scales of Early Learning (Mullen, 1995), also played a role in predicting parent-child interaction quality. Both verbal and nonverbal abilities were each significantly positively related to parent synchrony, child initiation, and shared attention. Increased child initiation was predicted by verbal ability, as well as parent synchrony and shared attention. Similarly, increased verbal ability, parent synchrony, child initiation, and decreased repetitive behaviors, as measured by the ADOS, all significantly predicted greater shared attention. Thus, autism symptoms are related to parent and child behavior during parent-child interactions, in the areas of child initiation of interactions, synchronous interactions, and shared attention between the parent and child.

Parenting and ADHD

Elevated attention and behavior problems are also related to quality of parent-child interactions (Choenni, Lambregtse-van den Berg, Verhulst, Tiemeier, & Kok, 2018; Cunningham & Boyle, 2002; DuPaul, McGoey, Eckert, & VanBrakle, 2001; Keown & Woodward, 2002; Li, 2018; Pauli-Pott, Schloß, & Becker, 2018). Keown and Woodward (2002) conducted a study examining parenting in families of children with significant

ADHD symptoms in the hyperactivity domain, assessing parenting through rating scale endorsements, semistructured interview, and observation of parent behavior. The sample for this study included 67 parent-child dyads, consisting of predominantly New Zealand Caucasian boys between 47 and 62 months of age and their mothers. Two participant groups were formed: a hyperactive group and a comparison group. Children with parent and teacher ratings of hyperactive behavior on the Preschool Behavior Questionnaire (PBQ; Behar, 1977) that both reached approximately the 90th percentile or above were assigned to the hyperactive group, and semistructured interviews with parents were used to confirm group status. Parents of hyperactive boys reported significantly more use of lax and overreactive parenting strategies relative to parents of the comparison group. Furthermore, when observed across a ten-minute interval of free play, mother-child dyads in the hyperactive group demonstrated significantly decreased interactional synchrony relative to comparison dyads, where a high level of interactional synchrony refers to responsive, reciprocal, connected, harmonious, and mutually focused mother-child interactions.

In a more recent study of maternal parenting behavior and attention problems in preschoolers, Pauli-Pott, Schloß, and Becker (2018) observed maternal responsiveness and sensitivity during parent-child interactions, assessed reward-related inhibitory control through a series of structured tasks completed by the child, and examined ADHD symptoms in children, as indicated by parent report through interviews and rating scales. One hundred twenty-five parent-child dyads were included in this study, consisting of 4-year-old children (57% male) and their mothers. Increased levels of maternal responsiveness involved following the child's lead during play and was characterized by

attentiveness and accurate interpretation of and adequate response to child behavior. On the other hand, decreased quality of maternal responsiveness referred to overinvolved or intrusive parent behavior, as well as under-involvement and low responsiveness to child behavior. In these families, ADHD symptoms were significantly negatively associated with observed maternal responsiveness, showing that increased child ADHD symptoms were correlated to decreased quality of parenting. Furthermore, increased maternal responsiveness observed in parent-child interactions at age 4 was significantly correlated to increased inhibitory control and decreased ADHD symptoms one year later. However, when initial ADHD symptoms were controlled, parenting behavior was no longer related to later attention problems. Therefore, although a predictive model, where increased positive parenting behavior predicted decreased child ADHD symptoms, was not supported in this study, overall findings showed a relationship between child attention and concurrent parenting behavior.

Additional support for the relationship between parenting and clinically elevated attention problems was demonstrated in a study conducted by DuPaul, McGoey, Eckert, and VanBrakle (2001). The authors examined parenting behavior in families of 94 preschoolers between age three and five, which formed two groups. Fifty-eight children met criteria for an ADHD diagnosis (86% male), while the remaining 36 children formed a control group of typical peers. Parent-child interactions were directly observed across controlled conditions, including free play, an interval of low adult attention, a parent-supervised task (i.e., puzzle and drawing), and a parent-directed clean-up task. Direct and indirect commands, positive behavior, negative behavior, questions, and reinforcement of child compliance were coded and examined as outcomes. Significant group differences

were observed across the free play, parent-supervised, and parent-directed situations. In particular, parents of preschoolers with ADHD used significantly fewer direct commands during unstrutured free play, relative to parents of control group children. During the parent-supervised and parent-directed tasks, parents of children with ADHD demonstrated significantly more negative behavior relative to control group parents. Therefore, although the nature and directionality of this relationship was not clear from these findings, researchers found a significant correlation between child ADHD symptoms and differences in parenting behavior.

Results of a similar study corroborate findings that quality of parenting is linked to attention problems demonstrated by preschool children, independent of related child behavior problems such as oppositional behavior (Cunningham & Boyle, 2002). Using parent or teacher ratings on the Disruptive Behavior Disorders (DBD) Scale (Pelham, Gnagy, Greenslad, & Milich, 1992) and the Home Situations Questionnaire (HSQ; Barkley & Edlebrock, 1987), 129 children (mean age = 57 months) were categorized into ADHD, ODD, combined ADHD and ODD, and comparison groups, where typical peers comprised the comparison group as per parent ratings on a screening questionnaire. Specifically, children with eight or more endorsed symptoms as per either parent or teacher ratings on the ADHD subscale scores of the DBD scale, as well as overall HSQ scores exceeding 1.5 standard deviations above the mean, were considered at-risk for ADHD. Similarly, children with five or more endorsed sympoms on the ODD subscale of the DBD scale and elevated HSQ problem scores were assigned to the group of participants at risk for ODD, where HSQ items asked about problems with daily routines. Thus, children in the group classified as at risk for ODD demonstrated elevated disruptive

behaviors and disrupted daily living. Children in the typical comparison group had parent and teacher ratings considered to be subclinical and within the average range on both the DBD scale and the HSQ. Mother-child interactions were observed during six 5-minute samples spanning a 30-minute observation, which included a variety of tasks: the conclusion of free play time, a structure task involving copying figures, daily activities (e.g., putting on socks and shoes), brief removal of parent attention and interruption of play, and clean-up. Observed parenting behaviors included praise, controls (i.e., commands, command-questions), and attends, defined as any positive verbal or nonverbal interaction with their child. A control/negative ratio was also recorded to capture controlling parent responses in intervals during which their child engaged in off-task or negative behavior. Results indicated that in this sample, mothers of children with both ADHD and ODD symptoms demonstrated more controlling parenting behavior relative to mothers of preschoolers with ODD alone. Thus, it appears that child ADHD symptoms may relate to parenting behavior above and beyond related behavior problems.

The relationship between ADHD symptoms and maternal parenting is further substantiated by the findings of Choenni, Lambregtse-van den Berg, Verhulst, Tiemeier, and Kok (2018), who examined these variables in a sample of 547 mother-child dyads as part of a longitudinal study conducted in the Netherlands. When children entered the study at three years of age, attention problems were assessed using parent ratings on the Dutch Child Behavior Checklist 1.5-5 (CBCL; Achenbach & Rescorla, 2001). To evaluate parenting behavior, maternal discipline and sensitivity were observed during parent-child interactions. During a task where mothers were asked to prevent their child from touching or playing with a set of toys, mothers' verbal and nonverbal (i.e., physical)

behaviors were categorized into commands, support, and physical obstruction or interference as potential discipline methods. Support contributed to positive discipline, whereas commands and physical obstruction/interference were classified as negative discipline strategies. During teaching tasks that were designed to slightly exceed the child's ability to complete them independently, maternal sensitivity was observed and coded in terms of supportive presence and intrusiveness, where decreased intrusiveness was characterized as increased sensitivity. The findings revealed that child attention problems were significantly positively associated with observed negative discipline and significantly negatively related to maternal sensitivity and use of positive discipline. Furthermore, observed maternal sensitivity in early childhood predicted decreased attention problems in middle childhood, even when early childhood levels of attention problems were controlled.

In another study of parenting and early child attention problems, Li (2018) assessed ADHD symptom severity in 201 kindergarten children and coded parenting behavior demonstrated during dyadic interactions. Parents rated child ADHD symptoms using the Vanderbilt Assessment Scale (NICHQ, 2002), and the Dyadic Parent-Child Interaction Coding System (DPICS; Eyberg et al., 2013) was used to code parent verbalizations during child-led play, parent-led play, and a clean-up task. Parents' use of praise and negativity were used as variables of interest in evaluating relationships between study variables, where praise included specific or labeled praise (i.e., a verbalization indicating positive evaluation of a specific child behavior) and negativity was coded for verbalizations expressing disapproval of the child or their behavior. Again, child ADHD symptoms were found to positively correlate to observed parent negativity

during parent-child interactions. Thus, child ADHD symptoms are related to decreased positive and increased harsh parenting behaviors, such as intrusiveness and overcontrol.

Overall, a review of existing literature reveals a relationship between child ADHD symptoms, such as hyperactivity and attention problems, and observed parenting. Stemming from studies using longitudinal designs, there is some evidence to suggest that increased positive parenting may predict decreased child attention problems later on (Choenni, Lambregtse-van den Berg, Verhulst, Tiemeier, & Kok, 2018; Pauli-Pott, Schloß, & Becker, 2018). Other studies have examined group differences using a cross-sectional design, with findings showing a significant negative correlation between increased child attention problems or hyperactivity and observed positive parenting during parent-child interactions (Cunningham & Boyle, 2002; DuPaul, McGoey, Eckert, & VanBrakle, 2001; Keown & Woodward, 2002). Child attention problems have also been linked to increased observed harsh parenting, such as controlling behavior (Cunningham & Boyle, 2002; DuPaul, McGoey, Eckert, & VanBrakle, 2001; Li, 2018).

In sum, a correlational relationship between child attentional problems and observed parenting is well supported in the literature. Moreover, some longitudinal studies indicate that parenting predicts child symptoms over time, even when initial symptom levels are controlled, suggesting a causal relationship may exist. However, most samples excluded children with ASD and/or low IQ. Therefore, the current study can add significantly to the existing body of research by exploring the relationship between these two variables in a sample of preschoolers with ASD.

Parenting Children with ASD and Attention Problems

Relatively little is known, in comparison, about parenting in families of young children with co-occurring ASD and ADHD symptoms. A comprehensive review of the literature was conducted across several databases, including EBSCO, Proquest, MEDLINE, PsychINFO, and PubMed using the following search terms: autis*, ASD, ADHD, inattention, hyperactivity, impulsivity, preschool*, kindergarten*, early childhood, and parent*. Where searches exceeded several hundred results, these were limited to those which included the relevant terms in the abstract. This search strategy yielded 399 total results, of which a single study examined self-reported parenting in families of preschool children with autism and ADHD symptoms assessed using gold-standard measures and methods, such as the ADI-R and/or ADOS-2 to examine autism and clinical interviewing or reliable and valid rating scales to evaluate ADHD symptoms (van Steijn, Oerlemans, de Ruiter, van Aken, Buitelaar, & Rommelse, 2013). Parents in this study did not report significant differences in parenting style by child diagnosis.

A second study examined parent-child interactions in families of nineteen boys with ASD (mean age = 8 years) with elevated externalizing problems or disruptive behaviors, as measured by the Behavior Assessment System for Children (BASC; Reynolds and Kamphaus, 1992) and Eyberg Child Behavior Inventory (ECBI; Eyberb, 1998), respectively (Solomon, Ono, Timmer, & Goodlin-Jones, 2008). Parent and child behaviors were observed for shared positive affect and parent positive affect. Across the course of parent child interaction therapy (PCIT), increased observed parent positive affect midway through treatment was significantly associated with decreased parent-reported behavior problems post-treatment. No additional studies were identified through

this systematic search wherein observed parenting was examined in preschoolers with both autism and ADHD symptoms, representing a substantial gap in the literature.

Preliminary evidence suggests, however, that parents of young children with comorbid autism and ADHD may engage in increased harsh parenting, relative to parents of preschoolers with autism alone (Donnelly, 2015). In this study, parent-child interactions were observed for 30 parent-child dyads including children between the ages of 5 to 12 years, all diagnosed with ASD using gold-standard measures, including the ADOS-2 and the ADI-R. Thirty percent of participant children met DSM-5 criteria for one or more comorbid disorders, and all but one of these children met criteria for a clinical diagnosis of ADHD. Parenting behavior was observed and coded across two tasks: an unstructured task and a structured teaching task. Results of this study found that parents of children with comorbid disorders (primarily ADHD) demonstrated significantly higher levels of harsh parenting during the structured task relative to parents of children with ASD alone, when level of cognitive functioning and observed and parent-reported aggression were held constant.

Summary

In sum, the literature suggests that child factors, including autism and ADHD symptoms and comunication skills are signficantly related to parenting behavior. However, little is known about how parenting varies in families of children with both ADHD and ASD symptoms versus those with ASD alone. In addition to the influence of child factors, such as ASD diagnosis, attention problems, and level of verbal ability, on parenting, parent factors, such as parenting stress and maternal depressive symptoms, are also likely to influence the quality of parenting significantly. Contextual factors also

likely play a role, such as income and race/ethincity. Given that observed parenting provides greater understanding of parent functioning and parent-child relationships relative to self-report (Blacher, Baker, & Kaladjian, 2012; Boonen et. al, 2015; Donnelly, 2015), the current study seeks to examine parent and child factors as they relate to observed quality of parenting. Further, emerging evidence suggests that parents of children with autism and comorbid disorders, particularly ADHD, are more likely to engage in harsh parenting behaviors (Donnelly, 2015) relative to parents of children with ASD alone. Therefore, this study seeks to specifically investigate differences in observed parenting among parent-child dyads in families with young children with ASD, exploring whether and how observed and reported parent and child factors, such as child attention and parenting stress, relate to parenting behavior in this sample.

This study used an observational coding system derived from a robust body of research wherein parenting quality is categorized into the following three dimensions: (1) emotional support, which involves providing a presence of comfort and protection, as well as displaying affection and warmth toward the child, (2) instruction, including scaffolding, guidance, limit setting, supporting the child's sustained involvement in the task, and facilitation of cognitive and social development that are age-appropriate, and (3) harsh parenting, such as psychologically aggressive behavior, emotional abuse, and other instances of maltreatment (Belsky, 1984; Bluestone & Tamis-LeMonda, 1999; Brassard, Hart, & Hardy,1993; Clark, 1999; Hart & Brassard, 1986; Miliotis, Sesma, & Masten, 1999). The findings of a wide body of literature demonstrates that children exhibit greater social competence when parents provide emotional support and warmth, engage in scaffolding and instruction with firm, authoritative guidance, and refrain from hostility

and emotional abuse (Baumrind, 1996, 2005; Canetti et al., 1997; Dix, 1991; Parker, 1979; Wilhelm et al., 2004). Parenting behaviors from the former two dimensions were categorized into a positive parenting scale, while hostility, maltreatment, and emotional abuse behaviors comprised harsh parenting. Thus, quality of parenting was ultimately categorized into two domains: positive and harsh parenting scales. These scales were used to code parent and child behavior during dyadic interactions across free-play, teaching, and clean-up tasks.

Hypotheses

Few studies have examined the variables of interest in the context of parenting in families of preschoolers with co-occurring ASD and ADHD symptoms. Given the limited literature that exists on this topic, the current study is exploratory in nature, with a small sample size and low power. However, a number of key strengths, including high control over sample characteristics and verified ASD classifications using gold-standard assessment tools, offer the opportunity to examine the relationship between child attention problems, parenting stress and depressive symptoms, and observed parenting behavior in a sample of mothers and their children with ASD. Therefore, three primary research questions are proposed:

First, the current study seeks to investigate whether greater parent-rated attention problems are associated with differences in parenting behavior in a sample of mothers and their preschoolers with ASD. Second, this study seeks to examine whether and how measures of parent well-being, such as parenting stress and depressive symptoms, relate to attention problems and observed parenting behavior. The third question this study seeks to address is concerned with whether other child factors, such as communication

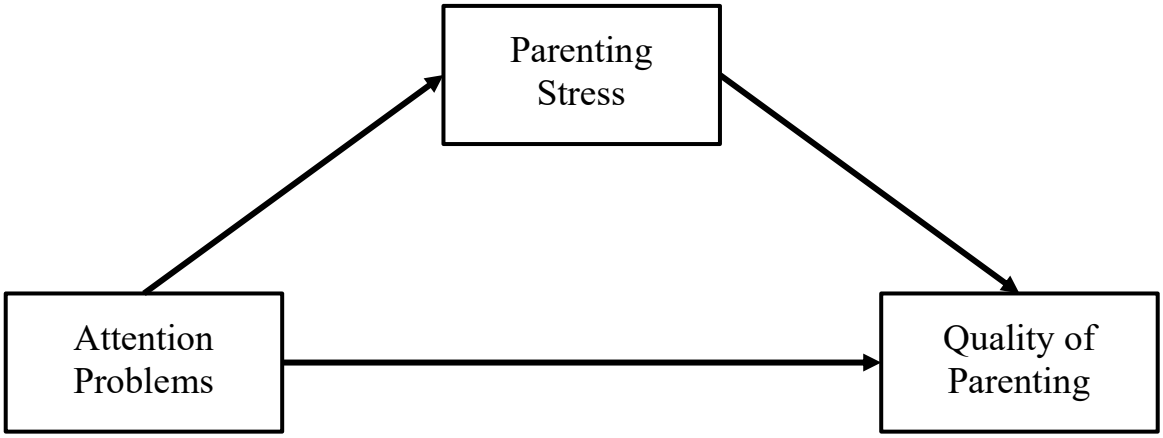
skills and observed negativity, strengthen the association between attention problems and differences in parenting. Given that some evidence exists suggesting that differences in parenting may predict child attentional problems, reverse models are also explored in this study.

Hypothesis 1a. Increased child attention problems, rated by mothers, will be significantly and positively correlated with observed harsh parenting behaviors and negatively correlated with positive parenting in this sample. In a recent study using the same observational scale, parents of elementary school age children with ASD and comorbid disorders (where 89% of children with comorbidities had a diagnosis of ADHD), were more likely to engage in harsh parenting, relative to parents of children with ASD alone, when controlling for IQ and aggression (Donnelly, 2015).

Hypothesis 1b. Increased parent-rated child attention problems will significantly relate to variation in increased harsh parenting behaviors and decreased positive parenting beyond variation accounted for by ASD severity, verbal ability as assesed by the teacher version of the Vineland Adaptive Behavior Scales -Third Edition (Vineland-3; Sparrow, Cicchetti, & Saulnier, 2016) communication domain score, and parent-rated aggression on the CBCL 1.5-5. Given that parenting behavior may also be associated with differences in child attention, the reverse models will also be explored.

Hypothesis 2. The positive relationship between parent-rated attention problems and observed harsh parenting will be partially or wholly mediated by parenting stress. Increased attention problems will be associated with increased parenting stress which will

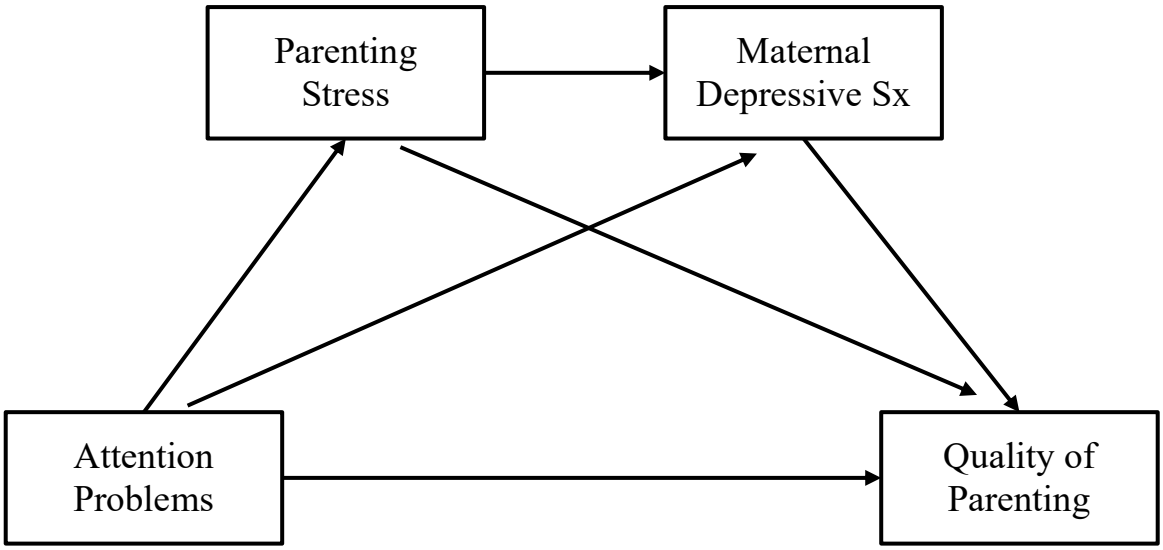
be linked to increased observed harsh parenting and decreased observed positive parenting.



A comprehensive review of a large body of research suggests that clinically elevated attention problems are associated with increased parenting stress (Theule, Wiener, Tannock, & Jenkins, 2012). Additionally, in a study investigating self-care and quality of parenting of children with ASD, lower levels of parenting stress predicted increased positive parenting (Johnson, 2019). Furthermore, one recent study found that a large majority of parents of children with autism and ADHD experience clinical levels of stress (Miranda, Tárragara, Fernández, Colomer, & Pastor, 2015). Therefore, it is possible that the pathway by which attention problems relate to quality of parenting is partially explained by the increased stress reported by parents of children with ADHD and autism. The reverse pathway will also be examined, where increased positive parenting is associated with decreased parenting stress which predicts decreased child attention problems.

Hypothesis 3. The relationship between attention and quality of parenting is partially mediated by maternal depressive symptoms. Mothers who report increased attention problems in their children will be more likely to report increased parenting stress which

will be related to increased depressive symptoms, which will correlate to increased harsh parenting. Low levels of attention problems will be associated with decreased maternal stress and fewer depressive symptoms, which will be linked to increased positive parenting.



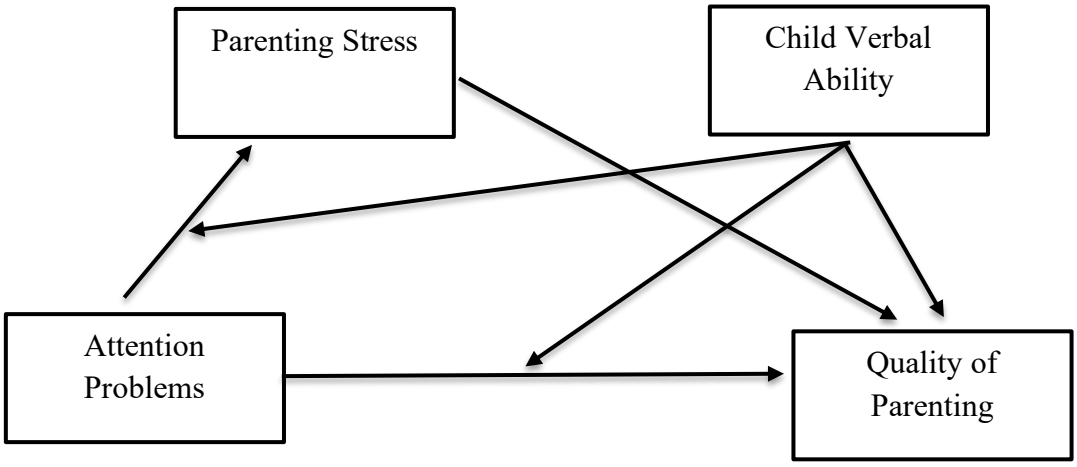
Parents of children with increased attention problems report increased parenting stress and depression (Baker & McCal, 1995; Brown & Pacini, 1989; Chronis, Lahey, Pelham, Kipp, Baumann, & Lee, 2003; Cunningham & Boyle, 2002; Gross, Shaw, Burwell, & Nagin, 2009; Hughes & Ensor, 2009; Harvey, Metcalfe, Herbert, & Fanton, 2011; Lahey, Piacentini, McBurnett, Stone, Hartdagen, & Hynd, 1988; Margari, Craig, Petruzzelli, Lamanna, Matera, & Margari, 2013; Romano, Kohen, & Findlay, 2010; Shaw, Lacourse, & Nagin, 2005; Theule, Wiener, Tannock, & Jenkins, 2012). Furthermore, evidence suggests that in families of children with ADHD, parenting stress is significantly positively associated with parent depression (Theule, Wiener, Tannock, & Jenkins, 2012), although the causal direction is unclear. Furthermore, in parents of children with autism, problem behaviors associated with ADHD have been linked to increased stress and depression (Donenberg & Baker, 1993; Lecavalier, Leone, & Wiltz,

2006., 2006; Osborne & Reed, 2009). Given that increased stress and depression predict parenting behavior in parents of children with either autism or elevated attention problems (Johnson, 2019; Shin & Stein, 2008), the current study seeks to further examine the relationship between these variables, as they occur in this preschool population of young children with ASD. There is little evidence to suggest that differences in parenting behavior predicts depressive symptoms. Therefore, reverse models were not explored.

Hypothesis 4. The relationship between parent-rated attention and observed parenting, mediated by parenting stress, will be moderated by observed child negativity toward their mother. In particular, when children demonstrate higher levels of negativity, parenting stress will be linked to a greater increase in harsh and a greater decrease in positive parenting, relative parents of children who demonstrate lower levels of negativity. Additionally, when children demonstrate more negativity toward the mother, increased attention problems will be associated with increased harsh and decreased positive parenting, whereas when children demonstrate less observed negativity, parent-rated attention problems will not directly relate to differences in observed parenting. In a prior study of parenting behavior in families of children with ASD (Donnelly, 2015), child negativity was significantly positively related to harsh parenting behaviors. Thus, it is likely that child negativity may related to parenting behavior in the current study sample. The reverse pathways will also be examined, where increased positive parenting and decreased harsh parenting are associated with decreased parenting stress and decreased child attention problems, for children who demonstrate lower negativity during dyadic interactions.

Hypothesis 5

The relationship between parent-rated child attention problems and observed quality of parenting is moderated by the child's verbal ability, as estimated by communication skills on the Vineland. For children with lower communication skills, attention problems will be related to a greater increase in harsh parenting and a greater decrease in positive parenting, relative to children with higher communication skills. Reverse models will also be explored.



Emerging evidence suggests that verbal ability may influence parenting quality in parents of children with ASD. Specifically, Hudry and colleagues observed that increased verbal skills were associated with higher levels of synchrony and shared attention during parent-child interactions (Hudry, Aldred, Wigham, Green, Leadbitter, Temple, Barlow, & McConachie, 2013). Thus, the current study seeks to investigate whether verbal ability influences the relationship between attention problems and quality of parenting in families of preschoolers with autism.

Methods

Participants

The present study is part of *Maternal wellbeing and observed parenting in mothers of preschool children with ASD*, a larger research project focused on parent-child dyads comprised of mothers and their preschool children with autism. The larger study was conducted to examine the modifiable factors associated with observed parenting behaviors and maternal well-being. Forty-nine[1] mother-child dyads participated in the larger research study, Teachers College IRB #16-310. The approved IRB protocol for this dissertation's use of the data is IRB #20-188. Participants were forty-nine biological mother-child dyads with children who attended an Applied Behavior Analysis (ABA) school in a suburb of a northeastern United States city. To be included children had to: a) have an Individual Education Program (IEP) or an Individualized Family Service Plan (IFSP), b) meet criteria for ASD on the ADOS-2, and c) be aged 30 to 71 months. Mothers had to speak and read English fluently. Of the 49 dyads, one voluntarily dropped out, two children did not meet criteria for ASD, and four dyads had corrupted video files, unusable for analysis of mother-child interactions, leaving 42 participating dyads.

Mothers' ages ranged from 27 to 47 (mean 36.8). Most mothers were well educated with a bachelor's degree or higher (n=33; 76.7%), identified as either White (n=19; 44%) or Hispanic/Latina (n=12; 28%), and reported being married or in a committed partnership (n=34, 77%). Reported household income level was bimodal: $75,000 to $99,999 range (n=10, 24%) and above $200,000 (n=10, 24%). The median income range was $100,000 to $149,999. Children's ages ranged from 30 to 66 months.

[1] Three of the 49 mothers were the participants of the pilot study. As few changes occurred between the pilot and the actual study, but did not affect the analyses of this dissertation.

Procedure

Over 100 parents received recruitment flyers, ten parents responded, and remaining participants were recruited through phone calls and face-to-face inquiries at drop off and pick up by school personnel (see recruitment letter in Appendix B). Mothers were paid $35. Consent forms were reviewed with the mother before a 70-minute assessment session at the school. Trained graduate students implemented the procedure. Mothers joined their child in the assessment room, which included a child size table, chairs, and a play mat (see Appendix D for layout). The experimenter provided instructions for the 20-minute interaction consisting of five core tasks/situations: completing demands, teaching task (i.e., structured task), free play (i.e., unstructured task), cleanup, and a frustration task. Only the teaching, free play, and cleanup tasks are included in this study. See Appendix E for the script. the child returned to the classroom while the mother completed a questionnaire.

During the teaching task, the dyad was given the instruction to build a house together, using developmentally-appropriate blocks (e.g., Legos, Duplos, or large blocks) during a five-minute interval. This task was selected to create a sufficient level of demand so as to elicit instruction and guidance from the mother. Following this task, additional toys were provided to the dyad for next five-minute interval, which encompassed the free play task. Additional toys included small cars, a toy phone, a doll family, Magna Doodle, crayons and coloring pages, a ball, and additional blocks. After the free play task, the experimenter introduced the cleanup task to the mother by entering the room and handing the mother paper indicating, “When I leave the room, please tell your child to cleanup. Do not cleanup by yourself.” The cleanup task lasted as long as

two minutes or was terminated early if the dyad finished cleaning up the toys before two minutes had passed.

Measures

Demographic Covariates. Participant dyad mothers provided information related to demographics and family characteristics through item endorsements and responses on questionnaire items. This demographic information and family characteristics included maternal age and education, marital status, maternal ethnicity/race, number of adults living in the home, and family income. These variables were selected since they are often found to be significantly associated with child outcomes given their effects on access to resources, support, and services. For the current study, socioeconomic status was approximated using estimates of median household income and percentage of households below the poverty line in participants' communities (United States Census Bureau, 2015). Of these demographic and family characteristics, number of adults living in the home and family income were significantly correlated with the proposed mediator, moderator, and outcome variables and were therefore included in models as covariates. All other demographic variables were unrelated to dependent variables. Correlations between measures of child functioning and study variables were also examined, including child's gender; age; autism severity, indicated by ADOS score; level of verbal communication, estimated by ADOS module used; cognitive functioning, approximated using Vineland communication score as a proxy; and length of time as a student at the therapeutic school. None were found to be significantly related to dependent variables, and thus, most were not retained as covariates in subsequent analyses. However, autism severity and Vineland communication have been demonstrated to relate to parenting stress and parent-child

interaction quality (Hudry, Aldred, Wigham, Green, Leadbitter, Temple, Barlow, & McConachie, 2013; Pastor-Cerezuela, Fernandez-Andres, Tarraga-Minguez, & Navarro-Peña, 2016). Therefore, these were included in models investigating the relationships between these variables.

Measures of Child Functioning

Autism Diagnostic Classification

Autism Diagnostic Observation Schedule – Second Edition (ADOS-2). To verify children's diagnosis and document the level of ASD severity, 47 children were administered the ADOS-2 (Lord et al., 2012) by PhD students with on-site reliability with a research reliable PhD in ABA. The ADOS-2 generates two scores based on observer ratings (social affect and repetitive behaviors) which are combined into the total score. In the current study, Modules 1, 2, and 3 were used for children with nonverbal, minimally verbal, and fluent language, respectively. The child's mother or member of the classroom team was present during Modules 1 and 2. ADOS-2 has high inter-rater reliability (agreement in diagnostic classification 92% to 98% in Modules 1 through 3; Lord, Luyster, Gotham & Guthrie, 2012) and high internal consistency for the Social Affect domain (α = .87 - .92), but not the Repetitive Behavior domain (α = .51 – .66) (McCrimmon & Rostad, 2014). Overall, the measure demonstrates good validity (Gotham, Risi, Pickles & Lord, 2007). Levels of severity for the child participants were low (n=4, 8.9%), moderate (n=14, 34.1%), and high (n=22, 53.7%).

The *Childhood Autism Rating Scale- Second Edition-Standard Form* (CARS-2, Schopler, Van Bourgondien, Wellman, & Love, 2010) was used to rate two of the 49 participants, since these two participants moved away after participating in the first

portion of the study. They were rated by the PhD in ABA with input from the child's classroom teacher. One child met criteria for ASD and the other did not. This 15-item measure addresses functional areas associated with ASD rated on a 4-point scale depending on the frequency, intensity, peculiarity, and duration of the behavior using direct observations and interviews. The CARS shows adequate reliability for children (α = .79; Garfin, McCallon, & Cox, 1988) and predicts gold standard clinical decisions as well as the ADOS (Pilowsky et. al., 1998). The CARS-2-Standard Form correlates highly with the ADOS (manual reports an *r* of .79).

The Vineland Adaptive Behavior Skills, Third Edition (Vineland-3; Sparrow, Cicchetti, & Saulnier, 2016) was used as an estimate of the child's verbal ability. The Vineland assesses adaptive functioning in Communication, Socialization, Daily Living Skills and Motor Skills domains. Because the Vineland-II Communication domain has been demonstrated to be highly correlated with cognitive ability in children with ASD (r =.80) (Perry, Flanagan, Dunn Geier, & Freeman, 2009), the updated Vineland-3 Communciation domain will be used as an estimate of child's verbal ability. The Communication domain includes ratings of the child's receptive, expressive, and written language, as indicated by teacher ratings on the survey form.

Child Behavior Checklist. The Preschool Scale of the Achenbach System for Empirically Based Assessment (ASEBA) Child Behavior Checklist (CBCL) was administered to measure maternal perceptions of child behavioral functioning (Achenbach & Rescorla, 2001). The Attention Problems scale of the CBCL has been found to demonstrate relatively high specificity and sensitivity in predicting an ADHD diagnosis in children (Biederman et al., 1993; Chen, Faraone, Biederman, & Tsuang,

1994; Eiraldi, Power, Karustis, & Goldstein, 2000; Hudziak, Copeland, Stanger, & Wadsworth, 2004; Raiker, Freeman, Perez-Algorta, Frazier, Findling, & Youngstrom, 2017; Steingard, Biederman, Doyle, & Sprich-Buckminster, 1992; Zelko, 1991). The CBCL has been found to have high reliability overall, with test-retest reliability falling within the .8 to .9 range across scales. For the attention problems and aggression scales on the CBCL preschool version, test-retest reliability *r*s were .78 and .87, respectively (Achenbach, 2009). It is noted that in the initial evaluation of test-retest reliability, ratings on the aggression scale demonstrated a test-retest attenuation effect, where retest ratings at Time 2 were significantly lower than initial ratings. This was not observed for attention problems. In this sample, the attention problems scale had fair internal consistency (α=.79). In the current study, attention problems were significantly negatively correlated to observed positive parenting (r= -.31, p=.04) and positively associated with parenting stress (r=.58, p<.001) and maternal depressive symptoms (r=.35, p=.02). Additionally, parent-rated attention problems were significantly negatively associated with observed child engagement during dyadic interactions (r=-.42, p=.01). The correlation between attention problems and harsh parenting was found to be nonsignificant. Observed child negativity toward the caregiver was unrelated to parent-rated attention problems, but significantly positively related to parenting stress (r=.39, p=.01). Parent-reported child aggression was significantly positively related to child attention problems (r=.48, p=.001), parenting stress (r=.55, p<.001), maternal depressive symptoms (r=.33, p=.03), and negatively related to child engagement (r=-.415, p=.01) and positive parenting (r=-.37, p=.02). Thus, aggression was explored as a covariate.

Measures of Parent Functioning

The Patient Health Questionnarie-9 (PHQ-9), is a reliable and well-validated nine item measure was used to screen for levels of depression symptoms. Internal consistency was high (α=.85-.90) in previous research and in this study (α = 0.80), and analysis of convergent and divergent validity indicate strong psychometric properties (Kroenke, Spitzer, & Williams, 2001)

The Parenting Stress Index-Fourth Edition, Short Form (PSI-4: SF; Abidin, 2012; Haskett, Ahern, Ward, & Allaire, 2006) is a 36-item measure that assesses parental stress responses on a 5-point Likert scale with items such as: "I feel trapped by my responsibilities as a parent." The PSI has excellent internal consistency as reported by the authors (α=0.95) and as found within this study (α=0.92). Construct validity as a measure of parenting stress is strong, based on extensive research as reported in the manual.

Observed Quality of Parenting. Videos of the parent-child interaction were coded based on observed nonverbal and verbal behavior that reflect the degree of parental emotional support (Quality of Emotional Support), the quality of the parents' instruction and scaffolding (Facilitation of Social/Cognitive Development), and the degree to which parents are critical or punitive of their child (Psychological Abuse, or Harsh Parenting). The coding system used, the *Psychological Multifactor Care Scale* (formerly known as the *Psychological Maltreatment Rating Scale*; Brassard, Hart, & Hardy, 1993), has been validly modified for use in an ASD sample and was adapted for use in this preschool sample (*Psychological Multifactor Care Scale — ASD Adapted Version*; Donnelly, 2015; Donnelly, Brassard & Hart, 2014; *Psychological Multifactor Care Scale — ASD Adapted Preschool Version,* Brassard, Donnelly, Hart, & Johnson, 2016). The original PMRS

scale was developed as an observational measure of emotional maltreatment in an child protection population and a matched classroom control sample; the measure included positive (Emotional Support and Quality of Instruction) and harsh behaviors (spurning, terrorizing, isolating, denying emotional responsiveness, and corrupting/exploiting) in order to capture a full range of parenting behaviors validated by the literature, (Hart, Brassard, Baker, & Chiel, 2017; Binggeli et al., 2001; Brassard & Donovan, 2006; Hart & Brassard, 1995; Hart & Glaser, 2011; Trickett et al., 2009). The original scale was developed using concensus definition of psychological maltreatment by experts in the field (Hart & Brassard, 1991). Based on the original evaluation of the PMRS, the scale reliably distinguished between maltreating and non-maltreating families (Brassard, Hart, & Hardy, 1993), and test-retest reliability was established with a sample of middle-class mother-child dyads two weeks apart.

Modifications for the ASD adaptation of the PMCS included truncating the range of ratings for most scales given the relative lack of nuance in parent-child interaction with ASD preschoolers and school-aged children, and modification of scales to fit free play and cleanup tasks. In Donnelly (2015), the PMCS-ASD was used with three types of tasks: a teaching, free play, and cleanup task. Observed Quality of Parenting was measured as Positive and Harsh Parenting. Positive parenting behaviors are those from the initially conceptualized Quality of Emotional Support and Facilitation of Social/Cognitive Development domains and harsh parenting from the Psychological Abuse Scale and the Parental Intrusiveness Scale (Ispa, Fine, Halgunseth, et al., 2004). Detailed item and coding information are described in Appendix F. Variables were rated based on Likert scales, with ordinal ranges from 1 to 3, 1 to 4, 0 to 3, and 1 to 5. To

maintain consistency and comparability of measurement across all variables, final codes were standardized to z-scores in IBM SPSS Statistics 25. The dependent variables of positive and harsh parenting were a mean score of the totals from all tasks after standardizing all scales so they ranged from 1 to 3, for both positive and harsh observed parenting. A low score on positive and harsh parenting scales indicate the absence of positive or harsh parenting behaviors, respectively, whereas a high score on the scales reflects a high presence of positive or harsh parenting behaviors.

The parent-child task was videotaped, transcribed (with 100% verification by a second reviewer), and then coded by trained research assistants who had both the transcript and the video available for making coding decisions. All coders were blind to the hypotheses of the study and were not given any identifiable information regarding the participants. They were then trained until they reached an acceptable level of reliability on each item (80% agreement or greater following procedures established for the ADOS-2; Lord et al., 2012). One research assistant was assigned to code each of the three tasks: Teaching, Free-Play, and Cleanup. Seventeen videos (38.64%) were double-coded by the doctoral-level trainer to calculate inter-rater reliability of each task. When there was a disagreement on coded items, differences in ratings were discussed among both raters and a consensus score was obtained which was used in future analyses. No more than three items disagreed on between raters for any individual scale.

Reliability statistics were considered acceptable when there was a Cohen's kappa of .40 (moderate) or .60 (good), (Cicchetti, Bronen, Spencer, Haut, Berg, & Oliver, 2006, Fleiss, Levin, & Paik, 2003). Cohen's kappa was .45 to 1.0 (median = .76) for 8 positive parenting items. If a Cohen's kappa could not be calculated, a percent agreement of 80%

or better was deemed acceptable (following procedures established for the ADOS-2; Lord et al., 2012). Research suggests observational assessment of relevant clinical items with restriction in range (i.e., on harsh parenting tasks when ratings were restricted to mostly 0's on the scale) can create problems in calculating reliability statistics (Hallgren, 2012). Therefore, when reliability could not be calculated due too little to no variability across coders, percent agreement between raters was used (Dixon & Brown, 1979). This occurred for 3 items on positive parenting (82.4-100% agreement, median =94.1%) and all 6 harsh parenting items (88.2–100% agreement, median=94.1%).

Observed Child Factors. Using the same coding system described above (*Psychological Multifactor Care Scale — ASD Adapted Preschool Version,* Brassard, Donnelly, Hart, & Johnson, 2016), videos of parent-child interactions were also coded to examine child factors, including the degree of child negativity toward the caregiver during the dyadic interaction. Child negativity captured the degree to which the participating child demonstrated anger, hostility, or dislike toward their mother. Behaviors such as rejection of ideas, pouting, angry facial expressions, criticizing, and unreasonable demandingness were coded as negativity toward the mother. For each task (i.e., free-play, teaching, clean-up), child behavior was rated as positive, mixed (both positive and negative behavior were demonstrated), or negative toward the mother using an ordinal Likert scale, ranging from 1 to 3. Final codes were averaged across the three tasks to encompass overall child negativity, where a low score demonsrates an absence of negativity toward the caregiver, while a high score reflects observation of strong, overt, or repeated negativity toward the caregiver across the session. Percent agreement was

used to examine inter-rater reliability across the three tasks (free-play: 82.4%, teaching: 88.2%, clean-up: 90%).

Similarly, child level of on-task engagement was coded for each task and averaged to obtain an overall rating of the degree to which the child remained engaged and participatory in tasks with the mother during the observation. Codes for this variable were assigned using the proportion of time the child was engaged in each task, using ordinal Likert scale ratings with a range from 1 to 4. Low scores indicate little or no engagement in the task (i.e., less than 25% of the total duration of the task), and high scores reflect high engagement in each task (i.e., more than 75% of the time). Codes were averaged across the three tasks for each participant, yielding an average score for level of engagement across the interaction. Inter-rater reliability was examined using percent agreement across the three tasks (free-play: 88.2%, teaching: 82.4%, clean-up: 100%).

Results

Preliminary Analyses

Data Preparation

Mean Imputations. Raw data from questionnaires was examined to identify the scope of missing data. There were 99% of total responses provided across measures, thus multiple mean imputation was not used. When at least 80% of a participant's responses were available on a particular scale or subscale for the PSI-4 SF, missing items were imputed using the mean score of other items on the scale. This method allows for imputed scores to be consistent with the participant's pattern of responses to similar items when an adequate number of actual responses were available. Overall, there were seven participants with imputed scores on the PSI-4 SF, one with imputed scores on the CBCL

Attention Problems scale, and nine with imputed scores on the CBCL Aggression scale. If more than 80% of items were omitted, the scale score was coded as missing. Overall, there were three participants coded as missing for the PSI-4 SF and two for the CBCL Attention Problems total raw scores.

Testing Assumptions. The dataset was evaluated to determine whether the variables were normally distributed. A skewness or kurtosis statistic between -1 and 1 typically indicates a reasonably normal distribution (Kline,1998). According to Kline's (1998) recommendation, cut-offs of z-scores for skew (skewness/standard error) greater than absolute value of 3.0 and kurtosis (kurtosis/standard error) greater than 10 were used in this dissertation, given that values of skewness greater than 3 and kurtosis greater than 10 are considered extreme.

A summary of skewness and kurtosis tests can be found in Table 3, which reviews all descriptive statistics for the dependent variables. Skewness and kurtosis were within the acceptable range for attention and parenting stress (see Table 3). In the current sample, mothers displayed parenting behaviors in the upper range of skillfulness, as indicated by the extreme negative skew statistic for positive parenting and positive skew statistic for harsh parenting. Additionally, the extreme positive skew demonstrates that mothers in this sample generally reported few depressive symptoms. However, regression analyses tend to be robust to skew so the variables were not rescaled. Kurtosis scores were in the acceptable range across variables.

Descriptive Statistics of Primary Study Variables

Table 1.1

Descriptive Statistics for Predictor, Mediating, Moderating, and Consequent Variables

Variable	*N*	*M*	*SD*	Min.	Max.	Skewness[a]	Skew z-score[c]	Excess Kurtosis[b]	Kurtosis z-score[c]
Positive Parenting	42	-0.09	3.75	-10.39	4.29	-1.18	-3.28	0.66	0.94
Harsh Parenting	42	0.05	2.07	-1.89	6.09	1.43	3.97	1.25	1.79
Child Attention Problems	46	5.29	2.68	0.00	10.00	0.19	0.53	-0.85	-1.21
ASD Severity	43	7.49	1.99	3.00	10.00	-0.63	-1.73	-0.43	-0.60
Child Verbal Skills	43	74.65	14.69	44.00	105.00	-0.24	-0.66	-0.48	-0.68
Child Aggression	45	11.64	7.34	0.00	30.18	0.59	1.67	0.28	0.41
Parenting Stress	45	85.57	20.26	37.00	122.00	-0.75	-2.08	0.14	0.20
Maternal Depressive Symptoms	45	3.29	3.51	0.00	13.00	1.18	3.28	0.72	1.03
Child Engagement	40	3.41	0.70	1.33	4.00	-1.18	-3.16	0.93	1.27
Child Negativity	40	1.23	0.34	1.00	2.33	1.42	3.79	1.56	2.13

[a] Standard error of skewness = .36

[b] Standard error of kurtosis = .70

[c] Z-statistic to determine cutoffs for skewness and kurtosis is determined by dividing the produced statistic by standard error

Table 1.2

Descriptives for Study Variables and Relevant Covariates Across ASD Only and ASD Plus Elevated Attention Problems Groups

Variable	ASD Only			ASD + Elevated Attention Problems		
	N	*M*	*SD*	*N*	*M*	*SD*
Positive Parenting	23	0.22	3.65	18	-0.58	4.03
Harsh Parenting	23	-0.003	2.17	18	0.12	2.07
Child Negativity	22	1.20	0.30	17	1.29	3.16
Child Engagement	22	3.59	0.62	17	3.16	0.76
Parenting Stress	25	79.24	20.76	19	96.24	11.94
Maternal Depressive Symptoms	25	2.68	3.26	19	4.26	3.71
ASD Severity	25	7.56	1.90	17	7.29	2.20
Verbal Skills	23	79.04	12.52	19	69.21	16.00
Child Aggression	25	9.97	6.79	19	14.30	7.42
Number of Adults in the Home	25	2.16	0.37	18	2.28	1.53
	N	*Frequency*	*Percentage*	*N*	*Frequency*	*Percentage*
Race/Ethnicity (White)	24	10	40%	20	9	45%
Race/Ethnicity (Hispanic)	24	7	29%	20	6	30%
Child Gender (Boy)	25	18	68%	20	19	95%

Note: Children with CBCL 1.5-5 Attention Problems t-scores greater than or equal to 65 were classified as having elevated attention problems.

Maternal Report Measures

Descriptive data for all included measures are presented in Table 1.1. In the current sample of mothers, Total Parenting Stress had a mean of 85.57 and a standard deviation of 20.26, with scale totals ranging from 37 to 122. Endorsements on the PSI-4 SF indicated ten participants (26.3%) with clinically significant T-scores of 60 or greater. With regard to self-report on the PHQ-9, the mean level of maternal depression was 3.29, with a standard deviation of 3.51 and a range of 0 to 13. Item endorsements of twelve mothers (25%) fall into the range of mild to moderate depressive symptoms, where raw scores of five to nine suggests mild symptom levels and scores of ten to fourteen are considered indicative of moderate symptom levels, as per the PHQ-9 interpretive cutoffs. No participating mothers reported depressive symptom levels in the severe range. In terms of child attention problems reported by mothers on the CBCL, attention problem scale totals ranged from 0 to 10, with a mean of 5.29 and a standard deviation of 2.68. For CBCL syndrome scales, such as the attention problems scale, T-scores ranging from 65 to 69 are considered to be in the borderline range, while scores of 70 or greater are considered to fall in the clinical range (Achenbach & Rescorla, 2001). In the current sample, twenty mothers (44%) reported child attention problems in the borderline and clinical ranges. Regarding parent-reported levels of child aggression, total scores ranged from 0 to 30 with a mean of 11.64 and a standard deviation of 7.34. Similar to the attention problems scale, T-scores on the aggression scale of 65 or greater are interpreted as falling above the typical range. Of the 36 mothers in this sample for whom complete data were available on this subscale, 11% of mothers (*N*=4) reported child aggression in the borderline or clinical ranges. Of mothers who endorsed elevated child attention

problems (n=20), only two mothers reported elevated aggression on the CBCL. Seven of the 20 mothers reporting elevated child attention problems also endorsed mild to moderate levels of depressive symptoms on the PHQ-9, and six indicated experiencing clinically significant parenting stress on the PSI-4-SF. Comparatively, of the 25 mothers who rated low attention problems on the CBCL, two indicated elevated child aggression, five endorsed mild to moderate depressive symptoms, and four reported elevated parenting stress.

Observed Parenting

Overall, a relatively high incidence of positive parenting behaviors and low incidence of harsh parenting behaviors were observed in this sample (see Table 1.1). The most commonly observed harsh parenting behavior in the current study was parental intrusiveness (see Table G1 in Appendix G). Parental intrusiveness was coded when parents imposed their own agenda during play or restricted access to or removed toys from the child, and thus, it was not coded during the clean-up task. During the free play task, seventeen parents engaged in moderately low or moderate intrusiveness, while only four demonstrated these levels of intrusiveness during the teaching task. Intrusiveness was low or absent in all other mother-child dyads. Spurning, terrorizing, isolating, corrupting/exploiting, and denying emotional responsiveness occurred at low frequencies across tasks. The most commonly observed harsh parenting behaviors during the clean-up task were denying emotional responsiveness, spurning, and isolating, where two mothers demonstrated one to two mild to moderate instances of denying emotional responsiveness, one mother demonstrated a pattern of repeated strong acts of denying emotional responsiveness, three mothers engaged in one or two mild to moderate

instances of spurning, two mothers exhibited one or two mild to moderate acts of isolating behavior, and one mother demonstrated a pattern of mild to moderate instances of isolating behavior. These harsh parenting behaviors were absent for all other mother-child dyads during the clean-up task. In sum, a low frequency of most harsh parenting behaviors were observed in this sample in general, limiting the range and variability of this scale in the current study. Nonetheless, harsh parenting was significantly positively correlated with child negativity toward their mother (r=.65, p< .01), suggesting that observed harsh parenting behaviors disrupted parent-child interactions above and beyond what would be expected by appropriate, authoritative limit setting.

Observed Parenting and Child Factors by Symptom Presentation

While the size of the current study sample makes it difficult to example group differences quantitatively, descriptive statistics (Table 1.2) and bivariate correlations (Tables G3 and H4 in Appendix G) were calculated to qualitatively observe parent and child behaviors for ASD only and ASD plus elevated attention problems groups. Given that parenting may also vary by child level of functioning, descriptive statistics were also calculated for the following subgroups: a) children with ASD only, b) children with ASD and low verbal ability (Vineland Communication Standard Score less than 70), c) children with ASD and elevated attention problems (CBCL Attention Problems T-Score greater than or equal to 65), and d) children with ASD, low verbal ability, and elevated attention problems (see Table G2 in Appendix G).

In order to explore whether any qualitatively observed group differences were significant, t-tests and chi-square tests were conducted for the two primary groups of interest: ASD only and ASD plus elevated Attention Problems on the CBCL 1.5-5 (t-

score greater than or equal to 65). Levels of positive parenting, harsh parenting, child negativity, maternal depressive symptoms, and ASD severity were similar across the two groups. Group differences approached significance for child engagement (p=.06) and CBCL 1.5-5 aggression (p=.05), where children with ASD and elevated attention problems demonstrated lower observed engagement and higher levels of aggression (see Table 1.2). Children with both ASD and elevated attention problems had significantly lower verbal skills in this sample (p=.03), and parents of children in this group indicated significantly higher levels of overall parenting stress (p=.001; see Table 1.2).

Correlations of Study Variables

Demographic variables that had significant correlations with dependent variables (DV) were considered in hypothesized models in order to control for the given variable and are presented in Table 2. Significant correlations were found between several potential covariates and the dependent variables of observed positive and harsh parenting. Family income was found to be significantly negatively correlated to harsh parenting (r=-.33, p=.04) and positively correlated with positive parenting (r=.40, p=.01). Given that White and Hispanic mothers made up the majority of the sample, two correlations were conducted to assess the significance of race. A significant positive correlation between the dummy coded variable indicating whether mothers identified themselves as white or non-white indicated that, in this sample, higher levels of overall positive parenting were associated with white mothers (r = .39, p = .01). A dummy coded variable comparing Hispanic mothers to all others indicated that in this sample Hispanic mothers were associated with significantly lower income (r=-.41, p=.007) and lower levels of overall positive parenting (r=-.42, p=.01). Although these correlations were observed relative to

positive parenting behaviors, race/ethnicity was unrelated to harsh parenting behaviors. Given the demographic disparities in this sample, the significant relationship between identification as a Hispanic mother and decreased positive parenting may be spurious and better explained by access to financial resources. Maternal report of total parenting stress on the PSI-4 SF was negatively correlated with overall positive parenting (r=-.38, p=.01), but was not correlated with overall harsh parenting. Parenting stress was also significantly positively related to maternal depressive symptoms (r=.56, p<.01), observed child negativity (r=.39, p<.05), and parent-rated child aggression (r=.48, p<.01). With regard to primary study variables, child attention problems, as indicated by parent report on the CBCL, were significantly negatively related to positive parenting (r=-.31, p=.04), as well as observed child engagement (r=-.42, p<.01). Attention problems were not significantly associated with harsh parenting. Observed positive parenting was significantly negativly correlated to harsh parenting (r=-.79, p<.001). Child gender, mother's marital status, mother's education level, child's autism severity score, community level poverty, maternal age, number of children in the home, were not correlated with any measures of observed parenting and were dropped from further consideration.

To explore whether and how parent, child, and social factors relate to observed parenting for young children whose parents describe them as presenting with or without elevated attention problems, correlations between primary study variables and related demographics were also examined for the two clinical presentations of interest: children with ASD only and children with ASD plus elevated attention problems. Significant correltions between variables differed across these two groups (see Tables G3 and H4 in

Appendix G). For children with ASD only, parent-rated child attention problems were significantly positvely associated with parenting stress (r=.55, p<.01) and maternal depressive symptoms (r=.41, p<.05), and for children with ASD and elevated attention problems, higher levels of attention problems were significantly negatively associated with observed positive parenting (r=-.49, p<.05). Attention problems were significantly positively correlated with child aggression in both groups (r=.40, p<.05, and r=.49, p<.01, respectively). For children with only ASD, parenting stress was significantly positively related to child aggression (r=.50, p<.05), observed negativity (r=.64, p<.01), and observed harsh parenting (r=.48, p<.05), and significantly negatively related to positive parenting (r=-.58, p<.01). In both groups, parenting stress was significantly linked to maternal depressive symptoms (r=.50, p<.05 and r=.62, p<.01, respectively).

Positive parenting was significantly positively correlated with child engagement in both groups (r=.75, p<.01 and r=.71, p<.01, respectively). Relationships between variables differed between groups along demographic factors in this sample. For children with ASD only, positive parenting was significantly positively related to self-identification as white (r=.59, p<.01), while this relationship was not significant for mothers of children with ASD and elevated attention problems. On the other hand, positive parenting was significantly positively related to income and negatively related to self-identification as Hispanic in the group including children with ASD and attention problems (r=.60, p<.05 and r=-.62, p<.01, respectively). In terms of child behavior, increased positive parenting was linked to decreased aggression in the group of children with elevated attention problems (r=-.56, p<.05), and greater positive parenting was

significantly linked with decreased child negativity for children with ASD only (r=-.66, p<05).

The relationships between harsh parenting and other factors varied less across groups with and without elevated attention problems. In both groups, observed harsh parenting was significantly positively correlated with child negativity (r=.71, p<.01 and r=.59, p<.05, respectively) and significantly negatively correlated with child engagement (r=-.56, p<.01 and r=-.50, p<.05, respectively).

Table 2

Intercorrelations for Primary Study Variables and Related Demographics

Variable	*n*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Attention Problems	46	--												
2. Parenting Stress (PSI-IV SF raw total)	45	.58**	--											
3. Maternal Depression (PHQ-9)	44	.34*	.56**	--										
4. Child Aggression (CBCL)	45	.48**	.55**	.30*	--									
5. ASD Severity (ADOS Score)	43	-.01	.20	.22	.16	--								
6. Child Communication (Vineland)	43	-.27	-.07	-.11	-.12	-.28	--							
7. Child Negativity, overall mean	40	.21	.39*	.07	.18	.25	-.20	--						
8. Child Engagement, overall mean	40	-.42**	-.34*	-.06	-.42**	-.12	.08	-.53**	--					
9. Number of Adults in the Home	46	-.15	-.21	-.34*	-.02	-.04	.11	.[c]	.[c]	--				
10. Family Income	43	-.08	.05	-.02	-.21	-.09	-.04	-.20	.35*	.02	--			
11. Race/Ethnicity (White v. not)	45	-.07	-.02	-.07	-.04	-.34*	.21	-.10	.33*	.13	.28	--		
12. Race/Ethnicity (Hispanic v. not)	45	.08	.07	-.08	.22	.11	.06	.23	-.39*	.10	-.41**	-.55**	--	
13. Positive Parenting, Overall Mean	42	-.31*	-.38*	-.15	-.37*	-.07	.03	-.58**	.73**	-.17	.40*	.39*	-.42**	--
14. Harsh Parenting, Overall Mean	42	.14	.26	.00	.13	.11	-.09	.65**	-.51**	.15	-.33*	-.26	.27	-.79**

Note: on the PSI-4 SF raw scores of 110 or greater convert to a percentile rank in the high range of total parenting stress, and scores of 114 or greater convert to a percentile rank in the clinical range. On the PHQ-9, scores between 5-9 suggest mild severity, and scores between 10-14 suggest moderate severity of depression symptoms.

[c]*Correlation could not be calculated given that at least one variable was constant.*

Hypothesis Testing

All hypotheses were tested with IBM's SPSS statistics software, and moderation and mediation models were evaluated using a conditional process analysis macro called PROCESS (Hayes, 2013) developed for use with SPSS. The PROCESS macro includes the use of bootstrapping, which strengthens the power and interpretability of results, particularly when there is non-normality in the sampling distribution.

Hypothesis 1a. The first hypothesis posited that increased parent-rated attention problems will be significantly associated with increased observed harsh parenting behaviors and decreased positive parenting behaviors. A significant negative correlation was observed between attention problems and positive parenting (r=-.31, p=.02), using a one-tailed significance test. Attention problems were unrelated to harsh parenting behavior in this sample (r=.14, p=.20).

Hypothesis 1b. Parent ratings of child attention problems were expected to be significantly positively related to observed harsh parenting and negatively associated with positive parenting, even when ASD severity, verbal ability (Vineland communication), and parent-rated aggression on the CBCL were held constant. To examine this hypothesis, a step-wise OLS regression anlysis was conducted in SPSS 26.0, where each covariate was added individually at the next step of the analysis. The regression analysis yielded significant results results for the first model where variation in attention problems were associated with decreased positive parenting, $F(1, 35) = 7.72$, p=.009, R^2=.18. When ASD severity was held constant, the overall model remained significant, $F(2, 34) = 3.81$, p=.03, R^2=.18, and attention problems were significantly negatively associated with observed positive parenting (b=-0.55, SE B=0.20, t = -2.75, p=.009). When verbal

ability was added to the model, the overall results were marginally significant, $F(3, 33) = 2.64$, $p=.07$, $R^2=.19$, and attention problems were still significantly related to decreased positive parenting (b=-0.57, SE B=0.21, t = -2.80, p=.008). In the model wherein ASD severity, verbal ability, and child aggression were all included as covariates, the overall regression analysis yielded significant results, $F(4, 32) = 3.14$, $p=.03$, $R^2=.28$. However, attention problems were no longer significantly related to variation in observed positive parenting, although the result approached significance (b=-0.37, SE B=0.22, t = -1.68, p=.10). While ASD severity and verbal ability were unrelated to observed positive parenting, child aggression problems were marginally significant (b=-0.16, SE B=0.08, t = -1.99, p=.06).

Table 3

Regression Analysis Summary for Child Attention Problems on Observed Positive Parenting When ASD Severity, Verbal Ability, and Child Aggression are Held Constant

Variable	Coefficient	SE	*T*	*p*
Constant	5.66	4.04	1.40	.17
Attention Problems	-.37	.22	-1.68	.10
ASD Severity	-.04	-.02	-.14	.89
Verbal Ability	-.02	.04	-.53	.60
Child Aggression	-.16	.22	-1.99	.06

A similar analysis was conducted to examine the relationship between parent-reported attention problems and observed harsh parenting. A step-wise approach was used, where ASD severity, verbal ability, and child aggression were added to the model individually such that each subsequent model had one additional covariate. Although results were marginally significant for the initial model where attention problems were associated with greater harsh parenting, $F(1, 35) = 3.78$, $p=.06$, $R^2=.10$, the findings were

no longer significant for subsequent models where ASD severity, verbal ability, and child aggression were held constant.

Given that parenting behavior may also be associated with differences in child attention, the reverse models were also explored. The regression analysis yielded significant results for the first model where variation in observed positive parenting was associated with decreased attention problems, $F(1, 35) = 7.72$, $p=.009$, $R^2=.18$. When ASD severity was held constant, the overall model remained significant, $F(2, 34) = 3.81$, $p=.03$, $R^2=.18$, and observed positive parenting was significantly negatively associated with attention problems (b=-0.33, SE B=0.12, t = -2.75, p=.009). When verbal ability was added to the model, the overall results were again significant, $F(3, 33) = 3.12$, $p=.04$, $R^2=.22$, and observed positive parenting was still significantly related to decreased attention problems (b=-0.34, SE B=0.12, t = -2.80, p=.008). In the model wherein ASD severity, verbal ability, and child aggression were all included as covariates, the overall regression analysis yielded significant results, $F(4, 32) = 3.46$, $p=.02$, $R^2=.30$. However, observed positive parenting was no longer significantly related to variation in attention problems, although the result approached significance (b=-0.22, SE B=0.13, t = -1.68, p=.10). While ASD severity and verbal ability were unrelated to child attention problems, parent-rated aggression problems were marginally significant (b=0.12, SE B=0.06, t = 1.93, p=.06).

Again, a similar analysis was conducted to examine the relationship between observed harsh parenting and parent-reported attention problems. A step-wise approach was used for this analysis as well, where ASD severity, verbal ability, and child aggression were added to the model at each subsequent step. Results were marginally

significant for the initial model where observed harsh parenting was associated with significantly increased attention problems, $F(1, 35) = 3.78$, $p=.06$, $R^2=.10$. Although the the findings were no longer significant for subsequent steps where ASD severity and verbal ability were added to the model, the final step during which child aggression was included yielded significant results, $F(4, 32) = 3.20$, $p=.03$, $R^2=.29$. When ASD severity, verbal ability, and child aggression were held constant, observed harsh parenting was unrelated to child attention problems (b=0.31, SE B=0.21, t = 1.43, p=.16). However, child aggression was significantly positively related to child attention problems (b=0.15, SE B=0.06, t = 2.67, p=.01).

Hypothesis 2. It was hypothesized that the expected positive relationship between parent-rated attention problems and observed harsh parenting, as well as the anticipated negative relationship between attention problems and positive parenting, will be partially or wholly mediated by parenting stress. Specifically, increased attention problems were expected to be associated with significantly increased parenting stress which was expected to be related to significantly increased decreased observed positive parenting and increased harsh parenting. To test this hypothesis, mediation analyses were conducted using PROCESS analysis (Model 4; Hayes, 2013) within SPSS 26.0 for Mac. Two separate regression analyses were conducted to investigate the hypothesis that parenting stress wholly or partially mediates the relationship between child attention problems and quality of parenting, measured as positive parenting and harsh parenting behaviors. Reverse models were also examined. The PROCESS analysis of the mediation model examining the relationship between attention problems and positive parenting yielded significant results, $F(2, 39) = 3.63$, $p=.04$, $R^2=.16$.

Table 4.1

Mediation Analysis Summary for Child Attention Problems, Parenting Stress, and Observed Positive Parenting

		Consequent						
		M (Parenting Stress)				Y (Positive Parenting)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*P*
X (Attention Problems)	A	4.33	0.98	<.001	c'	-.21	.25	.42
M (Parenting Stress)		--	--	--	B	-.06	.03	.11
Constant	i_m	61.64	5.60	<.001	i_y	5.70	2.44	.02
		R^2=.328				R^2=.160		
		F (1, 40)=19.539, p<.001				F (2, 39)=3.630, p=.04		

Through a mediation analysis conducted using ordinary least squares path analysis, the relationship between child attention problems and observed positive parenting does not appear to be significantly mediated by parenting stress. As can be seen in Table 4.1, increased child attention problems were significantly associated with higher levels of parenting stress (a=4.33). Additionally, when examining the relationship between attention problems and parenting stress as they relate to variation in observed positive parenting, the overall regression model yielded significant results. However, a bootstrap confidence interval based on 5,000 bootstrap samples was nonsignificant. The indirect effect (ab= -0.24) was not entirely above or below zero (-.503, .108) for the path where attention problems predicted stress which predicted positive parenting. Nonetheless, both regression models were significant, demonstrating that in this sample, elevated attention problems were related to increased parenting stress, $F(4,33) = 3.16$, p=.03, R^2=.28, and together, increased attention problems and parenting stress were linked to decreased positive parenting, $F(2, 39) = 3.63$, p=.04, R^2=.16. There was no

evidence that attention problems independently influenced quality of parenting (c'= -.21, p=0.42).

Table 4.2

Mediation Analysis Summary for Child Attention Problems, Parenting Stress, and Observed Harsh Parenting

		Consequent						
		M (Parenting Stress)				Y (Harsh Parenting)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X (Attention Problems)	a	4.33	.98	<.001	c'	-.01	.15	.93
M (Parenting Stress)		--	--	--	B	.03	.02	.17
Constant	i_m	61.64	5.60	<.001	i_y	-2.24	1.42	.12
		R^2=.33				R^2=.07		
		F (1, 40) = 19.54, p<.001				F (2, 39) = 1.38, p=.26		

A second mediation analysis was conducted using ordinary least squares path analysis to examine whether child attention problems are related to observed harsh parenting through whole or partial mediation by parenting stress. Results of this analysis were nonsignificant[2], $F(2, 39)=1.38$, $p=.26$, $R^2=.07$. As indicated in Table 4.2, increased child attention problems were significantly associated with higher levels of stress (a= 4.33), but parent-rated attention problems and parenting stress were unrelated to observed harsh parenting, $p=.26$. The bootstrap confidence interval based on 5,000 bootstrap samples was nonsignificant. The indirect effect (ab=0.12) was not entirely above or below zero (-.089, .289) for the path where attention problems predicted stress which predicted harsh parenting. There was no evidence of a direct effect of child attention problems on observed harsh parenting (c'=-.01, p=0.93).

[2] When income was included as a covariate in this model, the results were marginally significant, $F(3, 35) = 2.64$, $p=.06$, $R^2=.29$.

Reverse models were also examined. First, a mediation analysis was conducted using ordinary least squares path analysis to examine whether increased positive parenting predicts decreased attention problems through its effects on parenting stress. This analysis yielded significant results, $F(2, 39)=10.02$, $p<.001$, $R^2=.34$.

Table 4.3

Mediation Analysis Summary for Observed Positive Parenting, Parenting Stress, and Child Attention Problems

		Consequent						
		M (Parenting Stress)				Y (Attention Problems)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*P*
X (Observed Positive Parenting)	a	-1.98	.77	.01	c'	-.08	.10	.42
M (Parenting Stress)		--	--	--	b	.07	.02	<.001
Constant	i_m	83.60	2.84	<.001	i_y	-.77	1.59	.63
		R^2=.14				R^2=.34		
		F (1, 40)=6.65, p=.01				F (2, 39)=10.02, p<.001		

As can be seen in Table 4.3, increased positive parenting predicted lower levels of parenting stress (a=-1.98), and increased stress predicted higher levels of child attention problems (b=.07). A bootstrap confidence interval reached significance based on 5,000 bootstrap samples. The indirect effect (ab= -0.14) was entirely below zero (-.248, -.044) for the path where positive parenting predicted parenting stress which predicted child attention problems. There was no evidence that positive parenting influenced child attention independent of its effect on parenting stress (c'= -.08, p=.42).

The reverse model was also examined for observed harsh parenting. Specifically, a mediation analysis was conducted to explore whether increased harsh parenting predicts increased attention problems through its effects on parenting stress, which yielded significant results, $F(2, 39)=9.53$, $p<.001$, $R^2=.33$.

Table 4.4

Mediation Analysis Summary for Observed Harsh Parenting, Parenting Stress, and Child Attention Problems

		Consequent						
		M (Parenting Stress)				Y (Attention Problems)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*P*
X (Observed Harsh Parenting)	a	2.43	1.45	.10	c'	-.02	.17	.93
M (Parenting Stress)		--	--	--	b	.08	.02	<.001
Constant	i_m	83.65	2.97	<.001	i_y	-1.27	1.54	.41
		R^2=.07				R^2=.33		
		F (1, 40)=2.83, p=.10				F (2, 39)=9.53, p<.001		

While increased observed harsh parenting was marginally related to higher levels of parenting stress (a=2.43), increased stress was significantly positively associated with higher levels of child attention problems (b=.08). A bootstrap confidence interval reached significance based on 5,000 bootstrap samples. The indirect effect (ab= 0.19) was entirely above zero (.006, .373) for the path where observed harsh parenting predicted parenting stress which predicted child attention problems. There was no evidence that harsh parenting influenced child attention independent of its effect on parenting stress (c'= -.02, *p*=.93).

Hypothesis 3. Given that significant correlational relationships were observed between parenting stress and maternal depressive symptoms as they relate to child attention problems, an additional mediation model was examined to further investigate the relationship between parent report of child attention problems and quality of parenting, mediated by maternal depression and parenting stress, since parent mood and stress are likely to affect their behavior. A regression analysis was conducted to evaluate the hypothesis that child attention problems will predict quality of parenting, and this relationship will be mediated by maternal depression and parenting stress. Specifically,

the model examined the hypothesis that child attention problems will predict maternal depression and stress which will predict quality of parenting. The mediation model was tested using PROCESS Model 6.

Table 5.1

Mediation Analysis Summary for Child Attention Problems, Parenting Stress, Maternal Depressive Symptoms, and Positive Parenting

		Consequent										
Antecedent		M_1 (Parenting Stress)				M_2 (Depression Symptoms)				Y (Positive Parenting)		
		Coeff.	*SE*	*P*		Coeff.	*SE*	*p*		Coeff.	*SE*	*P*
X (Attention Problems)	a_1	4.33	.99	<.001	a_2	-.01	.22	.95	c’	-.21	.26	.43
M_1 (Parenting Stress)		--	--	--	d_{21}	.11	.03	<.001	b_1	-.07	.04	.10
M_2 (Depressive Symptoms)		--	--	--		--	--	--	b_2	.13	.20	.52
Constant	i_{m1}	61.64	5.68	<.001	i_{m2}	-5.90	2.03	.006	i_y	6.45	2.74	.02
		R^2=0.33 F (1, 39) = 18.98, *p*<.001				R^2=0.37 F (2, 38) = 11.04, *p*<.001				R^2=0.17 F (3, 37) =2.49, *p*=.08		

This mediation analysis, which was conducted using ordinary least squares path analysis, yielded marginally significant results. Specifically, increased child attention problems were significantly associated with greater parenting stress (a=4.33), which was significantly related to increased depressive symptoms (d_{21}=.11). However, increased depression did not significantly relate to positive parenting, although parenting stress remained marginally significant (b_1=-.07). A bootstrap confidence interval was marginally significant for one path based on 5,000 bootstrap samples. The indirect effect ($a_2d_{21}b_2$=-.306) was not entirely below zero (-0.630, 0.060) for the pathway where child attention problems predicted increased parenting stress, which predicted decreased positive parenting. There was no evidence that attention influenced quality of parenting independent of its effect on maternal depression and stress (c’= -0.21, p=0.43).

Table 5.2

Mediation Analysis Summary for Child Attention Problems, Parenting Stress, Maternal Depressive Symptoms, and Harsh Parenting

		Consequent									
Antecedent		M_1 (Parenting Stress)				M_2 (Depression Symptoms)				Y (Harsh Parenting)	
		Coeff.	*SE*	*P*		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X (Attention Problems)	a_1	4.33	.99	<.001	a_2	-.01	.22	.95	c'	-.01	.15	.94
M_1 (Parenting Stress)		--	--	--	d_{21}	.11	.03	<.001	b_1	.04	.02	.07
M_2 (Depressive Symptoms)		--	--	--		--	--	--	b_2	-.15	.11	.20
Constant	i_{m1}	61.64	5.68	<.001	i_{m2}	-5.90	2.03	.006	i_y	-3.09	1.56	.05
		R^2=0.33				R^2=0.37				R^2=0.11		
		F (1, 39) = 18.98, *p*<.001				F (2, 38) = 11.04, *p*<.001				F (3, 37) =1.52, *p*=.22		

A second mediation analysis was conducted to explore whether child attention problems indirectly influenced harsh parenting through its effects on parenting stress and depressive symptoms, which yielded nonsignificant results. As shown in Table 5.2, increased attention problems significantly predicted higher levels of parenting stress (a_1=4.33) which predicted increased depression (d_{21}=.11). However, increased depression did not predict harsh parenting behaviors. A bootstrap confidence interval was nonsignificant based on 5,000 bootstrap samples. There was no evidence of a direct effect of child attention problems on observed harsh parenting (c'=-0.01, p=0.94).

Hypothesis 4. A model was tested in PROCESS (Model 15) wherein parent ratings of attention problems predicted parenting stress which predicted quality of parenting, and observed child negativity moderated the relationship between attention problems and observed parenting. The analysis yielded significant results for the overall model, but the interaction terms where child negativity moderates the effects of parent-rated attention problems and parenting stress were both nonsignificant (b_1 = -.281 [-1.96, 1.40], SE B = .83, t = -.34, p = .74 and b_2 = -.210 [-.530, .111], SE B = .158, t = -1.33, p = .19). Given

this, a regression model that included child attention problems, parenting stress, and observed child negativity was tested without the interaction term, yielding significant results, $F(5, 34) = 5.33$, $p=.001$, $R^2=.44$. When individual predictors were examined, only child negativity was significant (b=-5.41, SE B=1.56, t = -3.48, p=.001). Thus, increased observed child negativity during the dyadic interaction was significantly associated with decreased positive parenting when attention problems and parenting stress were held constant.

Table 6.1

Regression Analysis Summary for Child Attention Problems on Observed Positive Parenting, Controlling for Parenting Stress and Observed Child Negativity

Variable	Coefficient	SE	*t*	*p*
Constant	10.25	2.41	4.26	<.001
Attention Problems	-.25	.23	-1.06	.30
Parenting Stress	-.03	.03	-.90	.37
Child Negativity	-5.41	1.56	-3.48	.001

A similar procedure was used to examine whether an interaction effect is significant for attention problems and observed child negativity on harsh parenting, in the mediated model whereby attention problems predict harsh parenting through their effect on parenting stress. An additional interaction term was included in the model to explore whether an interaction effect is significant for parenting stress and child negativity on observed harsh parenting. This model was testing using PROCESS (Model 15) in SPSS; the analysis yielded significant overall results, $F(5, 34) = 8.62$, $p<.001$, $R^2=.56$, and the unconditional interaction effect of parenting stress and observed child negativity on observed harsh parenting was significant (b = .25 [.09, .40], SE B = .08, t = 3.21, p = .003).

Table 6.2

Conditional Process Analysis Summary for Child Attention Problems, Parenting Stress, Observed Child Negativity, and Harsh Parenting

		Consequent						
		M (Parenting Stress)				Y (Harsh Parenting)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X (Attention Problems)	a	4.39	.96	<.001	c'	.11	.54	.84
M_1 (Parenting Stress)		--	--	--	b_1	-.26	.09	.01
W_1 (Child Negativity)		--	--	--	b_2	-19.37	7.61	.02
Attention x Child Negativity		--	--	--	b_3	.003	.40	.99
Parenting Stress x Child Negativity		--	--	--	b_4	.25	.08	.003
Constant	i_m	60.08	5.46	<.001	i_y	19.12	8.01	.02
		R^2=.36				R^2=.56		
		F (1, 38) = 21.01, p<.001				F (5, 34) = 8.62, p<.001		

Given the results of this analysis, parenting stress mediated the relationship between parent-rated attention problems and observed harsh parenting, and child negativity moderated the relationship between parenting stress and observed harsh parenting. Specifically, increased parent-rated child attention problems were significantly positively associated with parenting stress (a=4.39). Additionally, for parents of children who demonstrated increased negativity towards them during the dyadic interaction, increased parenting stress was associated with a greater increase in harsh parenting (b_4=.25), relative to dyads who demonstrated less child negativity during interactions.

Reverse models were also examined. First, a conditional process analysis was conducted using PROCESS (Model 15) in SPSS to examine whether an interaction effect is significant for positive parenting and observed child negativity on parent-rated child attention in the mediated model whereby observed parenting predicts child attention through its effect on parenting stress. An additional interaction term was included in the model to explore whether an interaction effect is significant for parenting stress and child

negativity on parent-reported child attention problems. This analysis yielded significant overall results, $F(5, 34) = 6.54$, $p<.001$, $R^2=.49$, and the unconditional interaction effect of parenting stress and observed child negativity on child attention problems was significant (b = -.24 [-.45, -.04], SE B = .10, t = -2.45, p = .02).

Table 6.3

Conditional Process Analysis Summary for Child Attention Problems, Parenting Stress, Observed Child Negativity, and Positive Parenting

		Consequent						
		M (Parenting Stress)				Y (Child Attention)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X (Positive Parenting)	a	-2.23	.74	.004	c'	-.45	.49	.36
M_1 (Parenting Stress)		--	--	--	b_1	.33	.11	.004
W_1 (Child Negativity)		--	--	--	b_2	21.84	9.17	.02
Positive Parenting x Child Negativity		--	--	--	b_3	.21	.35	.55
Parenting Stress x Child Negativity		--	--	--	b_4	-.24	.10	.02
Constant	i_m	82.06	2.76	<.001	i_y	-23.62	9.77	.02
		R^2=.19				R^2=.49		
		F (1, 38) = 9.19, p=.004				F (5, 34) = 6.54, p<.001		

Given the results of this analysis, parenting stress mediated the relationship between observed positive parenting and parent-rated attention problems, and child negativity moderated the relationship between parenting stress and parent ratings of child attention problems. Specifically, observed positive parenting was negatively related to parenting stress, and the interaction between parenting stress and child negativity was negatively associated with child attention problems. When child negativity was low, parenting stress mediated the relationship between observed positive parenting and child attention problems. When child negativity was high, the indirect effect of observed

positive parenting on parent-rated attention mediated by parenting stress was nonsignificant.

The reverse model was also examined for harsh parenting and child attention. Specifically, a conditional process analysis was conducted using PROCESS (Model 15) in SPSS to examine whether an interaction effect is significant for harsh parenting and observed child negativity on parent-rated child attention in the mediated model whereby observed parenting predicts child attention through its effect on parenting stress. An additional interaction term was included in the model to explore whether an interaction effect is significant for parenting stress and child negativity on parent-reported child attention problems. This analysis yielded significant overall results, $F(5, 34) = 6.54$, $p<.001$, $R^2=.49$, and the unconditional interaction effect of parenting stress and observed child negativity on child attention problems was significant (b = -.25 [-.48, -.02], SE B = .11, t = -2.24, p = .03).

Table 6.4

Conditional Process Analysis Summary for Child Attention Problems, Parenting Stress, Observed Child Negativity, and Harsh Parenting

		Consequent						
		M (Parenting Stress)				Y (Child Attention)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X (Harsh Parenting)	a	3.05	1.4	.04	c’	1.35	.93	.15
M_1 (Parenting Stress)		--	--	--	b_1	.35	.12	.006
W_1 (Child Negativity)		--	--	--	b_2	23.23	9.92	.03
Harsh Parenting x Child Negativity		--	--	--	b_3	-.83	.66	.22
Parenting Stress x Child Negativity		--	--	--	b_4	-.25	.11	.03
Constant	i_m	82.05	2.90	<.001	i_y	-25.71	10.39	.02
		$R^2=.11$				$R^2=.49$		
		F (1, 38) = 4.73, p=.04				F (5, 34) = 6.51, p<.001		

As seen in Table 6.4, parenting stress mediated the relationship between observed harsh parenting and parent-rated attention problems, and child negativity moderated the relationship between parenting stress and parent ratings of child attention problems. Specifically, observed harsh parenting was positively related to parenting stress, and the interaction between parenting stress and child negativity was negatively associated with child attention problems. When child negativity was low, parenting stress mediated the relationship between observed harsh parenting and child attention problems. When child negativity was high, the indirect effect was no longer significant.

Hypothesis 5. A model was tested in PROCESS (Model 15) wherein parent-rated attention problems predicted parenting stress which predicted quality of parenting, and child verbal ability (Vineland Communication) moderated the relationships between attention problems and observed parenting or parenting stress and observed parenting. This model was first examined with regard to observed positive parenting. This analysis yielded significant overall results, $F(5, 33) = 3.14$, $p=.02$, $R^2=.32$, and the unconditional interaction effect of parent-rated child attention problems and child verbal ability on observed positive parenting was significant (b = -.03 [-.07, -.003], SE B = .02, t = -2.23, p = .03).

Table 7.1

Conditional Process Analysis Summary for Child Attention Problems, Parenting Stress, Child Verbal Ability, and Positive Parenting

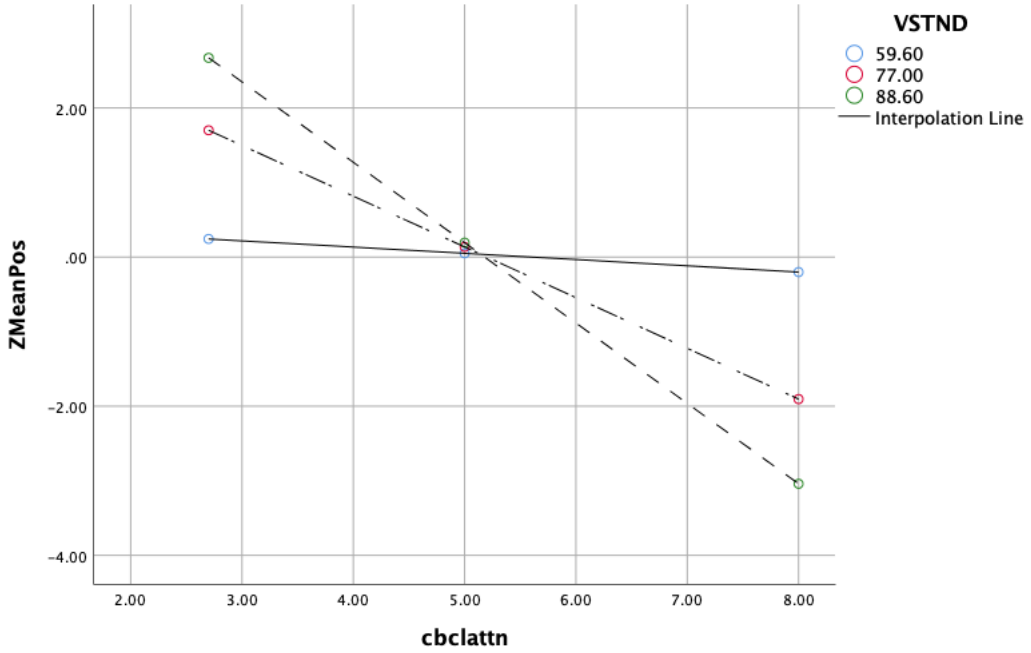
		Consequent						
		M (Parenting Stress)				Y (Positive Parenting)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X (Attention Problems)	a	4.84	.92	<.001	c’	.1.96	1.15	.10
M_1 (Parenting Stress)		--	--	--	b_1	-.22	.22	.33
W_1 (Verbal Ability)		--	--	--	b_2	-.06	.24	.80
Attention x Verbal Ability		--	--	--	b_3	-.03	.02	.03

Parenting Stress x Verbal Ability		--	--	--	b_4	.003	.003	.36
Constant	i_m	57.08	5.33	<.001	i_y	7.72	17.02	.65
		R^2=.43 F (1, 37) = 27.78, p<.001				R^2=.32 F (5, 33) = 3.14, p=.02		

As shown in Table 7.1, child verbal ability moderated the relationship between child attention problems and observed positive parenting. Specifically, for children with low verbal ability, child attention was unrelated to observed positive parenting (Vineland-3 Standard Score (SS) =59.6: b = -.08 [-.76, .59], SE B = .33, t = -.25, p=.80). For children with higher verbal ability, child attention problems were significantly negatively associated with observed positive parenting (Vineland-3 SS=77: b = -.68 [-1.23, -.13], SE B = .27, t = -2.52, p=.02; Vineland-3 SS=88.6: b = -1.08 [-1.81, -.35], SE B = .36, t = -3.01, p=.01).

Figure 1

Relationship between child attention and positive parenting, as moderated by child verbal ability



This model was also tested in PROCESS (Model 15) with regard to observed harsh parenting. This analysis did not account for variance in harsh parenting behavior and yielded nonsignificant overall results, $F(5, 33) = 1.09$, $p=.39$, $R^2=.14$.

Using PROCESS (Model 15) in SPSS 26.0, the reverse model was examined for the relationship between positive parenting and child attention problems, including parenting stress as a mediator and child verbal ability as a moderator. Although the overall model was significant, $F(5, 33) = 8.84$, $p<.001$, $R^2=.57$, none of the interaction terms or individual variables were significantly associated with variance in child attention problems.

Exploratory and Post-Hoc Analyses

A number of the reverse causality models yielded significant results, where quality of parenting was related to differences in parenting stress and parent-rated attention problems. Given that the use of two parent-rated measures by the same reporter contributes to concerns of method variance, reverse models exploring attention problems as a consequent variable were also examined with child engagement as an outcome. In the current sample, child engagement was significantly negatively correlated to parent-rated attention ($r=-.42$, $p=.01$). Given that this variable measured observed child on-task behavior, it was included as an outcome in reverse models as a proxy for attention in post-hoc analyses.

To test the reverse pathway examined in Hypothesis 2 with child engagement as the consequent variable, mediation analyses were conducted using PROCESS analysis (Model 4; Hayes, 2013) within SPSS 26.0 for Mac. Two separate regression analyses were conducted to investigate whether parenting stress wholly or partially mediates the

relationship between quality of parenting, measured as positive parenting and harsh parenting behaviors, and observed child engagement. The PROCESS analysis of the mediation model examining the relationship between positive parenting and child engagement yielded significant results, $F(2, 37) = 21.67$, $p<.001$, $R^2=.54$.

Table 8.1

Mediation Analysis Summary for Observed Positive Parenting, Parenting Stress, and Child Engagement

		Consequent						
		M (Parenting Stress)				Y (Child Engagement)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*P*
X (Positive Parenting)	A	-2.23	.74	.004	c’	.13	.02	<.001
M (Parenting Stress)		--	--	--	B	-.001	.005	.87
Constant	i_m	82.06	2.76	<.001	i_y	3.49	.38	<.001
		R^2=.19				R^2=.54		
		F (1, 38)=9.19, p=.004				F (2, 37)=21.67, p<.001		

Through this mediation analysis, observed positive parenting appears to be directly related to observed child engagement. As can be seen in Table 8.1, positive parenting was significantly negatively associated with parenting stress (a=-2.23) and positively associated with observed child engagement (c’=.13). Additionally, when examining the relationship between positive parenting and parenting stress as they relate to variation in observed child engagement, the overall regression model yielded significant results. However, parenting stress was not associated with variance in observed child engagement. Regarding the indirect effect of observed positive parenting on observed child engagement as mediated by parenting stress, a bootstrap confidence interval based on 5,000 bootstrap samples was nonsignificant. The indirect effect (ab= -0.002) was not entirely above or below zero (-.012, .012) for the path where observed

positive parenting predicted stress which predicted observed child engagement. Rather, positive parenting was directly associated with observed child engagement (c’= .13, p<.001).

A similar model was tested to examine the relationship between observed harsh parenting, parenting stress, and observed child engagement using PROCESS analysis (Model 4; Hayes, 2013), which also yielded significant overall results, $F(2, 37) = 7.76$, p=.002, R^2=.30.

Table 8.2

Mediation Analysis Summary for Observed Harsh Parenting, Parenting Stress, and Child Engagement

		Consequent						
		M (Parenting Stress)				Y (Child Engagement)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*P*
X (Harsh Parenting)	A	3.05	1.40	.04	c’	-.15	.05	.004
M (Parenting Stress)		--	--	--	B	-.01	.01	.20
Constant	i_m	82.05	2.90	<.001	i_y	4.00	.45	<.001
		R^2=.11				R^2=.30		
		F (1, 38)=4.73, p=.04				F (2, 37)=7.76, p=.002		

As per the results in Table 8.2, the relationship between observed harsh parenting and observed child engagement appears to be partially mediated by parenting stress. Observed harsh parenting was significantly positively associated with parenting stress (a=3.05) and negatively associated with observed child engagement (c’=-.15). Additionally, a bootstrap confidence interval based on 5,000 bootstrap samples yielded significant results for the indirect effect of harsh parenting on child engagement through its effects on parenting stress. This indirect effect (ab= -0.02) was entirely below zero (-.053, -.002) for the path where observed harsh parenting predicted stress which predicted

child engagement. At the same time, there was evidence observed harsh parenting also shared a direct association with child engagement (c'= -.15, p=.004).

Given the results above, parenting stress mediated the relationship between parent-rated attention problems and observed harsh parenting in the current sample, and child negativity moderated the relationship between parenting stress and observed harsh parenting. To examine whether the partially mediated relationship between harsh parenting and observed child engagement is also moderated by child negativity toward the caregiver, a conditional process model was tested using PROCESS (Model 15; Hayes, 2013), yielding significant results, $F(5, 34) = 5.43$, $p<.001$, $R^2=.44$.

Table 8.3

Conditional Process Analysis Summary for Observed Harsh Parenting, Parenting Stress, Observed Child Negativity, and Observed Child Engagement

		Consequent						
		M (Parenting Stress)				Y (Child Engagement)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X (Harsh Parenting)	a	3.05	1.4	.04	c'	-.64	.26	.02
M_1 (Parenting Stress)		--	--	--	b_1	-.03	.03	.31
W_1 (Child Negativity)		--	--	--	b_2	-3.45	2.79	.22
Harsh Parenting x Child Negativity		--	--	--	b_3	.36	.18	.06
Parenting Stress x Child Negativity		--	--	--	b_4	.03	.03	.39
Constant	i_m	82.05	2.90	<.001	i_y	7.47	2.92	.02
		R^2=.11				R^2=.44		
		F (1, 38) = 4.73, p=.04				F (5, 34) = 5.43, p<.001		

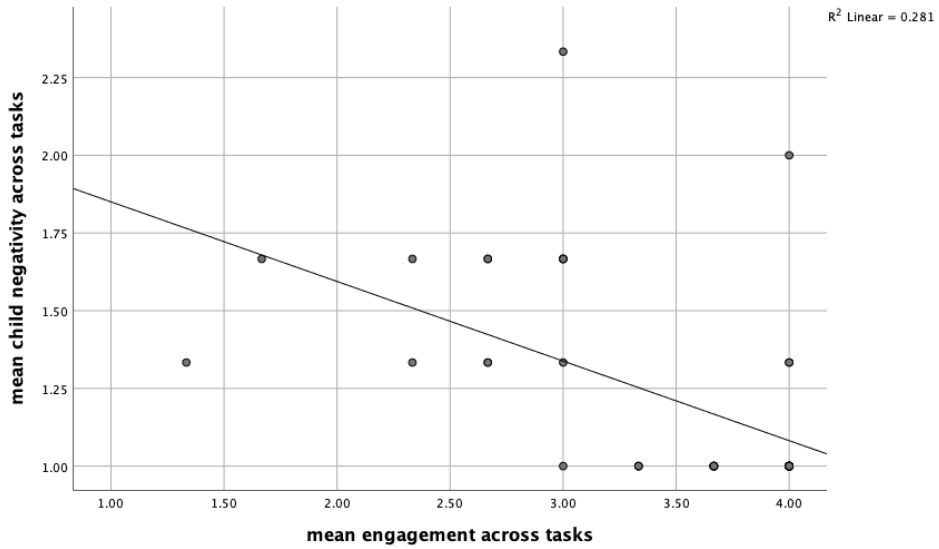
Given the results of this analysis (see Table 8.3), parenting stress mediated the relationship between observed harsh parenting and observed child engagement, and child negativity moderated this relationship. Again, observed harsh parenting was significantly positively related to parenting stress and negatively related to observed child engagement.

A bootstrap confidence interval based on 5,000 bootstrap samples yielded significant results where child negativity moderated the indirect effect of harsh parenting on child engagement through its effects on parenting stress. The conditional indirect effect (ab= -0.02) was entirely below zero (-.044, -.002) for the path where observed harsh parenting predicted stress which predicted child engagement, for children who demonstrated low negativity toward their caregiver. When child negativity was low, parenting stress mediated the relationship between observed harsh parenting and child engagement. When child negativity was high, harsh parenting was unrelated to child engagement both directly and indirectly (i.e., in the mediated model including parenting stress).

To further explore the association between child engagement and child negativity, a bivariate correlation was also conducted. As per the results of this analysis, child engagement was significantly negatively related to child negativity (r=-.35, p<.01; see Figure 2).

Figure 2

Bivariate Correlation Between Observed Child Engagement and Child Negativity



Similar post-hoc analyses were conducted using PROCESS (Model 15; Hayes, 2013) to examine whether verbal ability moderates the relationship between observed positive parenting and observed child engagement.

Table 8.4

Regression Analysis Summary for Observed Positive Parenting on Observed Child Engagement, Controlling for Parenting Stress and Verbal Ability

Variable	Coefficient	SE	*t*	*p*
Constant	3.40	.57	5.95	<.001
Positive Parenting	.13	.03	4.71	<.001
Parenting Stress	-.002	.01	-.37	.71
Child Verbal Ability	.002	.006	.42	.68

The overall conditional process model yielded significant results, $F(5, 31) = 5.87$, $p=.001$, $R^2=.49$. While the analysis yielded significant results for the overall model, the interaction terms where verbal ability moderates the effects of observed positive parenting and parenting stress on child engagement were both nonsignificant ($b_1 = .002$ [-.002, .005], SE B = .002, t = .96, p = .34 and $b_2 = .000$ [-.001, .001], SE B = ..001, t = .27, p = .79). Given this, a stepwise regression analysis was conducted to test a model that included observed positive parenting at the first level and parenting stress and verbal ability at the second level, omitting interaction terms. The first model yielded significant results, $F(1, 35) = 30.53$, $p<.001$, $R^2=.47$. While the second model was also significant, it did not explain a significantly greater degree of variance in child engagement, $F(3, 33) = 9.79$, $p<.001$, $R^2=.47$ (R^2 *change* = .005, $p= .86$). Observed positive parenting was significantly associated with greater observed child engagement when both parenting stress and verbal ability were held constant, as indicated in Table 8.4. Given the results of this analysis, observed positive parenting shared a direct positive relationship with observed child engagement, regardless of child verbal ability.

Given the observed results where child negativity moderated the relationships between quality of parenting and child outcomes (i.e., parent-rated attention, observed child engagement), the relationship between observed child negativity and quality of parenting was examined using bivariate correlations. Child negativity was significantly negatively related to observed positive parenting (r=-.58, p<.01). In this sample, when children demonstrated greater negativity toward their mothers, less positive parenting behavior was observed. Additionally, a significant positive correlation was found between observed child negativity and harsh parenting (r= .65, p<.01). When children demonstrated more negativity toward their caregiver, mothers exhibited greater harsh parenting.

Discussion

Summary of Findings

In order to gain an improved understanding of the context for parenting in families of preschool-aged children with ASD, the current study explored parent and child factors using parent and teacher-reported measures and direct observation of dyadic interactions. It was hypothesized that child attention problems would be related to the quality of parenting behaviors and that these relationships would be partially or fully mediated by parent characteristics (i.e., parenting stress, depressive symptoms) and moderated by child characteristics and behaviors (i.e., child verbal ability, child negativity).

First, the sample was categorized into two subgroups that differed by symptom presentation: those children with ASD alone and those with ASD and elevated parent-rated attention problems. In this sample, children with ASD plus elevated attention

problems had significantly lower verbal skills, as assessed by teacher ratings on the Vineland-3 Communication scale. Moreover, mothers of children with ASD and elevated attention problems reported significantly greater levels of overall parenting stress, relative to mothers of children with ASD alone, lending support to the findings of Peters-Scheffer et al. (2012) who observed that greater attention problems were associated with increased parenting stress in families of children with ASD.

In the current study, when parents reported elevated attention problems, children were observed to demonstrate lower engagement in tasks during dyadic interactions, although this difference was only marginally significant. However, observed child engagement shared a significant, moderate and negative relationship with child attention problems in the overall sample, suggesting that perhaps the marginally significant group difference was due in part to a small sample size. Additionally, mothers of children with elevated parent-reported attention problems generally reported higher levels of aggressive behavior, with marginal significance. Levels of positive parenting, harsh parenting, child negativity, maternal depressive symptoms, and ASD severity were similar across these two groups.

It was hypothesized that increased parent-rated attention problems would significantly relate to greater observed harsh parenting and decreased positive parenting behaviors. In this sample of families of young children with ASD, mothers who saw their children as having increased attention problems demonstrated less positive parenting. The relationship between child attention problems and decreased positive parenting remained significant when ASD severity was held constant. This sample included participating children with a relatively higher level of symptoms severity (approximately

88% demonstrated moderate to high symptom severity during the ADOS-2), and families were receiving a high level of effective ASD-specific behavioral intervention. Furthermore, this study included a relatively well-resourced sample of mothers, with many earning higher household incomes and holding jobs that offer time off from parenting. Together, these sample characteristics might have obscured the relationship between ASD symptom severity and parenting behavior. Nontheless, the results of the current study observed similar findings to studies that examined parenting behavior in families of children with a clinical ADHD diagnosis, where elevated attention problems have been linked to observations of less positive parenting (Choenni, Lambregtse-van den Berg, Verhulst, Tiemeier, & Kok, 2018; DuPaul, McGoey, Eckert, & VanBrakle, 2001; Pauli-Pott, Schloß, & Becker, 2018). In this sample of preschool age children with ASD, attention problems were related to decreased positive parenting, regardless of autism symptom severity.

Verbal ability has also been linked to differences in observed parenting behavior in families of children with ASD (Hudry, Aldred, Wigham, Green, Leadbitter, Temple, Barlow, & McConachie, 2013). Therefore, verbal ability was also included as a covariate when exploring the relationship between attention problems and observed parenting, still controlling for ASD severity. Although the overall model was only marginally significant, the negative association between attention problems and observed positive parenting remained significant. It is important to note that in this sample, those children who parents described as having elevated attention problems had lower verbal skills, according to teacher ratings. Nonetheless, this finding suggests that in this sample, attention problems may be related to decreased positive parenting above and beyond

variance accounted for by ASD severity and verbal ability. However, when ASD severity, verbal ability, and parent-rated child aggression were all held constant, the relationship between parent-rated attention problems and observed positive parenting approached but failed to reach significance. This finding might be explained by limited power in this study due to a small sample size.

Parent-rated attention problems were unrelated to observed harsh parenting behavior in this study, unlike the findings of Donnelly (2015). However, fewer parents demonstrated harsh parenting in the current study than in Donnelly (2015), and the low variability in observed harsh parenting may have prevented the detection of differences in this outcome. Additionally, perhaps the high level of behavioral intervention received by participating dyads in the present study played a role in the low frequency of observed harsh parenting behaviors.

Most hypotheses tested in the current study used mediation models. Mediation models assume causality, given the theorized position of the mediating variable between the predictor and consequent variables. Therefore, the mediation models tested in the hypotheses in this study examined the relationships between variables with an assumed direcitonality. The bootstrapping approach used to examine the significance of mediation models estimates the indirect effect of the predictor variable on the consequent variable through the mediator, which again assumes a causal relationship. Given that this study aimed to better understand the significance, strength, and direction of relationships between the proposed variables, reverse models were also explored to add to a growing body of literature that is otherwise in its nascency, that is, the investigation of attention problems in young children with ASD as they relate to observed quality of parenting.

The first mediation model hypothesized that the expected positive relationship between parent-rated attention problems and observed harsh parenting, as well as the anticipated negative relationship between attention problems and positive parenting, would be partially or wholly mediated by parenting stress. First, the hypothesized mediation model was tested for positive parenting. Results indicated that, in this sample, mothers who rated higher child attention problems expressed greater levels of overall parenting stress. Furthermore, when mothers reported higher levels of child attention problems and parenting stress, they demonstrated decreased observed positive parenting. However, a mediated model was not supported.

Child attention problems have been linked to greater levels of parenting stress and depression across a wide body of literature (Baker & McCal, 1995; Brown & Pacini, 1989; Chronis, Lahey, Pelham, Kipp, Baumann, & Lee, 2003; Cunningham & Boyle, 2002; Gross, Shaw, Burwell, & Nagin, 2009; Hughes & Ensor, 2009; Harvey, Metcalfe, Herbert, & Fanton, 2011; Lahey, Piacentini, McBurnett, Stone, Hartdagen, & Hynd, 1988; Margari, Craig, Petruzzelli, Lamanna, Matera, & Margari, 2013; Romano, Kohen, & Findlay, 2010; Shaw, Lacourse, & Nagin, 2005; Theule, Wiener, Tannock, & Jenkins, 2012). Furthermore, elevated attention problems are associated with greater stress in parents of children with ASD (Peters-Scheffer, Didden, & Korzilius, 2012), and in parents of children with ADHD, greater stress has been linked to increased levels of depressive symptoms (Theule, Wiener, Tannock, & Jenkins, 2012). Moreover, greater stress and depression predict parenting behavior in parents of children with ASD or ADHD (Johnson, 2019; Shin & Stein, 2008). Therefore, parenting stress and depressive

symptoms were explored as possible mediators of the relationship between attention problems and observed positive and harsh parenting.

In the current study, those parents who reported greater parenting stress reported significantly increased depressive symptoms; however, depressive symptoms were unrelated to observed quality of parenting. Although parents who rated their children as more inattentive also reported experiencing significantly more parenting stress, a mediated model whereby child attention was linked to differences in quality of parenting through its effect on stress and depressive symptoms was unsupported. Thus, in this sample, increased attention problems did not relate to decreased positive parenting by way of parenting stress or depressive symptoms.

There are a number of reasons this result may have been observed. First, it is possible that parenting behavior may vary as a direct result of attention problems, where parents of young children with ASD and greater attention problems have adopted different strategies or approaches to interact with their children that involve less use of positive behavior strategies compared to parents of young children with ASD and fewer attention problems. However, given the absence of experimental control in an observational study, this result may also have been observed because the hypothesized causal order was in conflict with the true underlying mechanism. Given that mediation analyses assume causal order by placing a variable between the predictor and consequent variables, the directionality of the model may have been unsupported. Therefore, reverse models were also explored, discussed below.

Given that emerging evidence suggests that child negativity may be significantly related to observed parenting behaviors in families of children with ASD (Donnelly,

2015), it was also hypothesized that the expected mediated relationship between child attention problems and observed parenting by way of parenting stress would be moderated by child negativity. Results failed to support interactions between child negativity and child attention problems or parenting stress. Instead, findings showed a relationship between observed child negativity and decreased positive parenting in this study sample. With regard to harsh parenting, when children demonstrated negativity toward their caregiver, increased parenting stress was linked to a greater increase in harsh parenting, relative to dyadic interactions with less child negativity.

It was also hypothesized that verbal ability would moderate the anticipated mediated relationship between child attention problems and observed quality of parenting via parenting stress. Results showed that verbal ability moderated the relationship between child attention problems and observed positive parenting. Specifically, when verbal ability was higher, child attention problems were significantly negatively related to observed positive parenting, where parents who reported more attention problems demonstrated less positive parenting during dyadic interactions. On the other hand, when verbal ability was low, child attention was no longer related to observed positive parenting. In general, it appears that parents may demonstrate less frequent or less consistent responsiveness to child bids for attention (i.e., verbal behavior, initiation of joint attention) when children with ASD have less developed verbal skills (Dakopolos, 2019; Greer, 2018). It appears that parents may be more attuned to nuanced differences in child behavior for children with higher levels of functioning. This could explain in part why parents in this sample were less responsive to differences in child attention when children had lower verbal skills, thus differences in parenting were not contingently

linked to differences in child behavior. On the other hand, when children demonstrated higher levels of verbal skills, parents in this sample were more likely to change their behavior (i.e., observed parenting) in response to differences in child behavior (i.e., attention problems). This tendency may be responsible, in part, for the finding of the present study, where parent behavior is directly linked to differences in child attention, when their children have more developed verbal skills.

A number of reverse models produced significant findings. Parents who engaged in increased positive parenting during dyadic interactions reported experiencing significantly less parenting stress. Furthermore, parenting stress mediated the relationship between observed quality of parenting and parent-rated child attention problems, for both positve and harsh parenting behavior. Given that the use of two parent-report variables based on the endorsements of the same rater (parenting stress, child attention problems) give rise to concerns related to method variance, exploratory post-hoc analyses were conducted using child engagement as a proxy for child attention.

In this sample, parent-rated attention problems were significantly negatively associated with observed child engagement during mother-child interactions. In post-hoc analyses, child engagement was examined as an outcome related to parenting behavior. When parents demonstrated greater positive parenting, children demonstrated increased engagement in the observed activities, though this relationship was not mediated by parenting stress. In other words, in this sample, children whose parents engage in more positive parenting (i.e., affection, warmth, guidance, limit setting) were also more engaged during dyadic interactions, spending more time exhibiting on-task behavior.

The relationship between observed harsh parenting and child engagement was partially mediated by parenting stress. Mothers in this sample who demonstrated increased harsh parenting also reported experiencing more parenting stress, and their children demonstrated less engagement during dyadic interactions. Therefore, in this group of mothers of young children with ASD, when parents engaged in more harsh parenting behaviors (i.e., spurning, intrusiveness), they also reported higher levels of parenting stress, and their children spent less time on-task during parent-child interactions. It is possible that this is a direct relationship, where engaging in harsh parenting behaviors produces greater feelings of stress. Alternatively, the increase in harsh parenting may relate to greater stress through an unexamined mediating mechanism, such as child compliance. In particular, it is possible that as parents engage in more harsh parenting, children demonstrate decreased compliance, which in turn leads to greater stress. Future studies should further examine the nature of this relationship, particularly in relation to possible mediating variables, such as child compliance or behavior problems. This is especially important as harsh parenting behavior may exacerbate child attention problems over time.

Interestingly, this relationship, where observed harsh parenting was associated with decreased child engagement, partially mediated by increased parenting stress, was strongest when children demonstrated low negativity toward their caregivers. When children demonstrated greater negativity toward their caregivers during dyadic interactions, the relationship between harsh parenting and child engagement was no longer significant. There are a number of reasons this result may have been observed. First, engagement in negativity toward the mother is not on-task behavior. Therefore,

when high rates of negativity were observed, children may have been less engaged, regardless of parenting behavior. Alternatively, high child negativity and harsh parenting may mark a coercive pattern of interaction, where such dyadic negativity has been linked to off-task behavior and variable parenting (Lunkenheimer et al., 2016). Additionally, in the current study, quality of parenting was directly linked to differences in child negativity in this sample. Specifically, when parents demonstrated greater positive parenting and less harsh parenting, children exhibited less negativity toward their caregivers. This pattern of mutual negative behavior and affect during interpersonal interactions has been observed across relationship types, as well as parent-child dyads of varying ages, demographics, and clinical characteristics (Asbrand et al., 2017; Gottman & Krokoff, 1989; Lieneman et al., 2020; Patterson, Reid, & Dishion, 1992).

Effects of Parenting on Attention in Treatment Studies

In the current study, the results of hypothesis testing were significant for reverse models where differences in quality parenting were associated with differences in child attention, both when reported by parents and when directly observed as on-task behavior. Specifically, it was observed that, in this sample of mothers, increased positive parenting was significantly related to decreased child attention problems by way of a decrease in parenting stress. A similar result was observed for harsh parenting, where increased harsh parenting behavior was linked to higher levels of child attention problems via greater parenting stress. While these findings were not in support of the originally hypothesized models, they are substantiated by the findings of a burgeoning body of literature examining the effects of parenting or parent-child interaction focused treatments on child

attention and behavior (Farmer et al., 2012; Lecavalier et al., 2017; McRae et al., 2019; Solomon et al., 2008).

In a 2008 study conducted by Solomon and others, researchers examined parent-rated child behavior, parenting stress, and observed parent-child interactions in a sample of nineteen children with ASD (mean age=8 years), where diagnostic classifications were made using DSM-IV-TR (APA, 2000) criteria, the ADOS Generic (ADOS-G; Lord et al., 2000), and the ADI-R (Catherine Lord et al., 1994). To be included in the study, children also had significantly elevated behavior problems (on the BASC Externalizing Problems scale or the Eyberg Child Behavior Inventory; ECBI) an IQ over 70, as measured using the Wechsler Abbreviated Intelligence Scale (WASI, Wechsler, 1999). Using matched pairs by age, level of cognitive functioning, and level of behavior problems, participants were randomly assigned to parent-child interaction therapy (PCIT) or a waitlist comparison group. Participating children and their parent(s) in the treatment group received two phases of treatment, which included instruction and coaching in child-directed interaction (CDI) and parent-directed interaction (PDI). Children in the study demonstrated significantly less hyperactivity over time, and treatment effects for hyperactivity and attention problems neared significance ($p=.055$ and $p=.062$, respectively). Additionally, PCIT had a significant effect on degree to which parents described their children's behavioral symptoms as a problem. This finding suggests that in families of children with ASD, improved parent-child interactions may have the potential to elicit fewer attentional and behavioral problems.

Parent training has also been linked to decreased problem behaviors in children with ASD (Farmer et al., 2012). In a larger study of 124 children with ASD, Farmer and

colleagues investigated the relationship between adherence to parent training and child behavior outcomes, when combined with antipsychotics. Participating children, who were an average of seven years of age, were randomly assigned to two different treatment groups: risperidone only or combined treatment (risperidone and parent training). When combined with psychopharmacological treatment, parent adherence to parent training led to a greater decrease in noncompliance in children with ASD, compared to parents who demonstrated less treatment adherence (Farmer et al., 2012). When controlling for baseline levels of noncompliance, there were no significant differences in outcomes across the two treatment groups. However, after 24 weeks of treatment, parent training had a large and significant effect on child noncompliance, for those participants with high baseline levels of noncompliance. Thus, the implementation of positive parenting strategies appeared to produce decreased noncompliant behavior in this sample of children with ASD, particularly for those with high levels of initial noncompliance.

In a more recent study of parenting training in families of young children with ASD, parent, child, and social factors were explored as potential moderators of treatment effects on child disruptive behaviors (Lecavalier et al., 2017). 180 young children (ages three to seven years) with ASD participated in this study, where ASD classifications were made using DSM criteria and corroborated using both the ADOS and the ADI-R. Participating children and their caregivers were randomly assigned to either a parent training treatment or a psychoeducation comparison group. Child behavior outcomes were measured using parent ratings on the Aberrant Behavior Checklist (ABC; Aman et al., 1985a, 1985b) and the Home Situations Questionnaire, Autism Spectrum Disorder (HSQ; Chowdhury et al., 2016). ADHD symptoms were estimated using the ADHD

subscale on the Early Childhood Inventory (ECI; Sprafkin et al., 2002). Treatment effects within this study varied by the presence or absence of probable ADHD, where parent training had a significant effect on child behavior for those children without probable ADHD. Comparatively, treatment group was unrelated to behavior outcomes for children with probable ADHD in this sample. This result suggests that, in families of young children with ASD, parents who engage in parent training report fewer behavioral symptoms. Furthermore, this outcome was not observed in families of young children with ASD and elevated ADHD symptoms. A number of possibilities exist in which this finding may have been observed. First, it could suggest that comorbid attention problems may in fact create a more complex context for parenting, as observed in the current study and corroborated by other emerging findings (Donnelly, 2015). Alternatively, it is possible that children with greater attentional skill are more influenced by differences in parenting, or perhaps children with ADHD and autism have not yet developed the behavioral awareness and control to respond to differences in parenting, compared to those children with ASD and no attention problems. Nonetheless, in this sample, children with fewer ADHD symptoms demonstrated a greater decrease in behavior problems following parent training compared to children with greater ADHD symptoms (Lecavalier et al., 2017).

There is some evidence to suggest, then, that increased positive parenting may produce decreased hyperactive, externalizing, and problem behaviors in children with ASD (Farmer et al., 2012; Lecavalier et al., 2017; Solomon et al., 2008), thus lending a small body of support to the findings of the current study. Emerging evidence from a

recent study suggest that increased harsh parenting may also be linked to greater externalizing problems in children with ASD or ADHD (McRae et al., 2019).

In a sample of 50 dyads comprised of children between the ages of six and twelve years and their primary caregivers, McRae and colleagues (2019) explored whether and how parental and contextual factors may relate to child behavior in children with either ASD or ADHD. Parents rated their child's behavior and their own adjustment and parenting behavior using questionnaire item endorsements. The Child Behavior Checklist (CBCL; Achenbach and Rescorla, 2001) was used to assess child internalizing and externalizing problems, and the Alabama Parenting Questionnaire (APQ; Frick, 1991) was completed by participant parents to evaluate their parenting behavior. Parent and child behavior were not directly observed in this sample. Nonetheless, more self-reported harsh and disengaged parenting was associated with greater externalizing problems in this sample that included children with either ASD or ADHD (McRae, 2019). Although this relationship may be inflated due to the use of a single rater for both variables, the findings are in line with those of the current study, which directly observed parenting behavior.

While the present study explored the directionality of the hypothesized relationship between quality of parenting and child attention, child development has often been conceptualized as a transactional process, where children both shape and are shaped by their environments (Sameroff & Mackenzie, 2003). When interacting with their children, parents may attempt to produce their desired level of responsivity from the child, which may dampen or amplify the child's level of energy and engagement during

the dyadic interaction. When this heightened or decreased level of stimulation occurs across time and becomes a pattern, the interaction system is altered.

Within a transactional model, it appears likely that children may respond differently to their environment over time if their development occurs in a context of greater positive or harsh parenting. Parents who provide warmth, supportive instruction, and limit setting may elicit greater attention and engagement from or decrease overstimulation in their children during dyadic interactions. If these patterns are established over time, parenting may influence children's behavior by either changing the level of their typical response or by evoking a novel response, as per the transactional framework. In the case of children with attentional problems then, it is possible that greater harsh parenting may exacerbate overstimulation in the child, while a lower level of positive parenting may not sufficiently reinforce and elicit engagement during dyadic interactions.

Strengths of the Study

The current study contributes to a limited body of research examining directly observed parent-child interactions in mothers of young children with ASD. Furthermore, it appears evident from a comprehensive review of the literature that few studies have examined observed parenting behavior and child attention in families of children with ASD. While many studies that investigate ASD use parent-report to make diagnostic classifications, the present study employed gold-standard diagnostic tools to verify the diagnostic status of participant children, constituting a major strength of this research. An experienced PhD behavior analyst, with research training in the use of the ADOS-2 and a wealth of experience implementing interventions with families of children with ASD,

supervised the use of gold-standard diagnostic measures to confirm that all participating children in the current study met criteria for ASD.

A second major strength of this research is the use of multiple sources of information, including direct observations of behavior, teacher ratings of child level of communication, and parent self-report. Whereas many studies rely on the endorsements of a single rater, the current study examined variables drawn from the responses of multiple informants (i.e., mothers and teachers), as well as objective observation of parent-child interactions, coded by trained observers who were blind to research hypotheses. The use of information from multiple sources lessen the possible influence of bias to the overall study. Furthermore, the interpretability of the results of the present study are enhanced by the use of direct observations of parenting behavior. Much of the existing literature relies on parent self-report of their own functioning, including their internal experiences (i.e., parenting stress) and behavior (i.e., parenting). Although it offers an appealing practical alternative to directly observing behavior, self-report of parenting is subject to response bias. Thus, the use of mothers' behavior during dyadic interactions to examine quality of parenting also represents a strength of the present study.

In this study sample, there was a high degree of control over sample characteristics, given the population from which participants were sampled. This lessened the degree of potential variance between families on important factors that would have otherwise needed to be controlled. All participating families had the same level and type of educational structure and access to professional resources. In particular, the children who participated in the present study all attended a full-day educational program that

integrates a high level of intervention. Children in this program receive a high level of services, and families have access to both a school social worker and an on-site parent coordinator for as-needed support. Given their children's attendance at this intensive program, mothers who participated in this study also have access to time off from caregiving during school hours. As discussed below, this exceptional degree of control comes with a natural caveat: decreased generalizability of findings. Nonetheless, these sample characteristics offer a high level of control over some of the potentially confounding variance between participating families.

Parent-ratings of child attention problems shared a significant and moderate negative correlation with observed child engagement in the current study. This represents another meaningful strength, as it lends validity to parent ratings of child attention problems. In this sample, when mothers described their children as having greater attention problems, trained coders, who were blind to study hypotheses, observed these children to be less engaged in tasks during dyadic interactions. Conversely, when parents identified fewer child attention problems, children were directly observed to demonstrate increased engagement during mother-child interactions.

Lastly, the larger study from which the present research is drawn was designed and carried out by a collaborative, multidisciplinary team. This interdisciplinary cooperation of this team enhanced the methodological design and approach by offering increased diversity of contributing academic and clinical perspectives.

Limitations of the Study

There is a limited body of research investigating parenting in populations of children with comorbid ASD and attention problems. Therefore, although this study

makes an important contribution to an otherwise emerging literature, it is characterized by a number of important limitations, including exploratory methodology, a small sample size, limited generalizability, and the lack of a comparison group. First, a self-selection bias may have existed in the study sample. Participating families for this study were drawn from a population of early childhood age students enrolled in an intensive, therapeutic preschool. Given this, participants in the current study were limited to those children who had received an ASD diagnosis at a young age and who were receiving a high dosage of highly effective behavioral intervention(Selinske, Greer, & Lodhi, 1991).

Although recruitment efforts were expanded to include all eligible children in the school, most mothers who agreed to participate did so after face-to-face or phone call follow-ups made by school staff. Additionally, the young age at which the children in this study received ASD diagnoses and intervention separates them from many children with ASD who are diagnosed at approximately five years of age, on average (Zablotsky, Colpe, Pringle, Kogan, Rice, & Blumberg, 2017). As a result, a number of possible selection biases and limitations to generalizability may exist. First, early identification of ASD has been linked to greater symptom severity. This is substantiated by the observed level and distribution of ADOS-2 and CARS-2 severity scores in the current study sample. Therefore, the current sample may not represent the full breadth of functioning that exists across the spectrum of ASD. It is also possible that mothers in this study may be particularly attuned, competent parents, as they identified developmental delays and sought out intensive, effective intervention for their children early in their development. Nonetheless, the generalizability of findings is limited by the nature of the population from which participants were recruited and sampled.

In terms of measurement, although the CBCL demonstrates strong psychometric properties, there was no second rater of attention, which may detract from the interpretability of the findings regarding attention problems in the current study. While many studies use a single subscale based on the endorsements of a single rater to assess child functioning, it may limit the strength of the attention variable. Given that attentional functioning was not a primary target of the larger study, other measures of attention were not included in the study design. Although the CBCL attention scale demonstrates validity, high sensitivity, and heritability, the inclusion of a second rater or clinical evaluation of attention would likely have contributed to increased interpretability of the present findings.

Other potentially relevant data were omitted at the point of data collection, due in part to practical limitations. A number of parent, child, and contextual, social, or demographic were assessed in the larger study, constituting a significant strength in design and offering a robust source of information regarding parenting and related factors in this sample. However, other, additional data may have enhanced the scope of the current study, such as the presence of other children with disabilities in the home and measures of parent psychopathology (e.g., ASD, ADHD), as some evidence suggests that parent symptoms may relate to parenting in families of children with ASD and/or ADHD (Van Steijn et al., 2013).

The order of measurement may have also influenced the current study findings. All participants completed study measures in the same order across data collection for this study. Data were collected first on parent and child behavior during the observed parenting tasks, followed by collection of parent endorsements on self-report measures.

The order of tasks was designed intentionally to reduce possible parent fatigue from completion of a somewhat lengthy questionnaire from influencing their behavior during parent-child interactions. Furthermore, the questionnaire might have elicited negative recollections of difficult child behaviors, which could have negatively influenced parenting behavior in interactions. For both of these reasons, the order of measures was deliberately selected as the optimal approach, given the study design. Nonetheless, the lack of a balance procedure whereby the order of tasks was manipulated might have elicited bias in mothers' responses as they progressed from the interaction to the questionnaire and from measure to measure within the questionnaire, thus representing another limitation of the present study. Future studies can eliminate or attenuate this effect by implementing a counter-balancing procedure or providing questionnaires well in advance of parent-child interactions (i.e., by mail one to two weeks prior to the observation session), thus limiting the influence of unintended order effects.

Clinical Implications

A relationship appears to exist between child attention and parenting. Most notably, observed quality of parenting was found to be significantly associated with attention and engagement by way of parenting stress. Given the characteristics of the study sample, the findings of the present research are well-suited to inform intervention recommendations for young children with ASD.

When children demonstrated more negativity toward their caregiver, higher levels of parenting stress were linked to a greater increase in harsh parenting behavior. Thus, when children with ASD present negativity toward their caregivers, interventions that target child negativity may be likely to produce a reduction in harsh parenting behavior

during parent-child interactions. Therefore, the reduction of child negativity through parent-mediated interventions may weaken the association between parenting stress and harsh parenting. For instance, a mother-based joint attention intervention has demonstrated promising effects on increased child self-regulation and diminished child negativity (Gulsrud, Jahromi, & Kasari, 2010). In a sample of 34 mother-child dyads including toddlers with ASD, participating dyads were randomly assigned to a mother-mediated joint attention intervention or waitlist control condition (Gulsrud, Jahromi, & Kasari, 2010). Child self- and parent co-regulation strategies were coded during episodes of distress, which included any mother-child interaction characterized by facial/body or vocal expression of negativity by the child. Results of the study demonstrated significant improvements in child self-regulation and maternal co-regulation of child negativity during dyadic interactions. Significantly decreased child negativity was observed over time across the intervention. Such interventions appear to be fruitful in producing decreased child negativity during dyadic interactions between mothers and their young children with ASD.

Behavioral parent training appears to contribute to decreased noncompliant behavior in children with ASD, even when they present with severe behavior problems (Farmer et al., 2012). In addition to addressing child behavior, parent training-based interventions may also facilitate the attenuation of parenting stress (Keen et al., 2010; Kuravackel et al., 2018; Schrott et al., 2019). For instance, one individually-based parent intervention that involved psychoeducation, parent training, and ongoing implementation support was shown to diminish parenting stress in caregivers of recently diagnosed young children (Keen et al., 2010). Another study (Schrott et al., 2019) examined the effects of a

group-based behavioral parent training program designed for families of children with disabilities, Stepping Stones Triple P, a program that has exhibited effectiveness in reducing child behavior problems (Tellegen & Sanders, 2013. Participating parents reported significantly decreased negative parenting (i.e., laxness and overreactivity) and parenting stress following the intervention. While these results appear promising, comparison group and random assignment were not included in the study design. Another intervention that combined parent training with group support for parent well-being, C-HOPE, shows promise within this population (Kuravackel et al., 2018). Although differences were largely nonsignificant across waitlist and treatment groups, parents who participated in this intervention reported significantly fewer child behavior problems and lower levels of parenting stress after the program, when compared to pre-treatment levels. Parent-child interaction therapy (PCIT) has also been examined in ASD populations. In a study that used random assignment to treatment and waitlist-control groups, PCIT led to significantly decreased levels of problem behaviors and significantly increased shared positive affect between parents and their children with ASD. The treatment also had a marginal effect on hyperactivity and attention problems.

Overall, substantial evidence in the literature supports an effect of behavioral parent training (BPT) on decreased attention and behavior problems, and experts have concluded that BPT meets criteria as a well-established evidence-based treatment for children with ADHD (Pelham & Fabiano, 2008). While this is often interpreted as an effect where more positive parenting and less negative parenting lead to decreased ADHD symptoms, the effect of changes in observed parenting behavior on child functioning is less well examined, particularly in children with ASD. Although it is

known that ADHD is heritable (Banaschewski et al., 2010), it is also generally agreed that a genetics by environment interaction influences the development, course, and presentation of ADHD symptoms (Wermter et al., 2010). Few studies have examined whether differences in observed parenting behaviors predict measured changes in child attention problems, especially for children with ASD. However, emerging findings suggest that this may be the case, supported by the findings of the current study. In other words, while parents are not necessarily the cause of their child's attention problems, they are an essential part of the solution in mitigating inattentive symptoms.

In the current study, harsh parenting behavior appeared to exacerbate stress, which was in turn linked to more pronounced child attention problems and decreased child engagement during dyadic interactions, lending further support to the appropriateness of such treatments for young children with ASD. By working closely with parents to decrease harsh parenting behavior through interventions such as parent training or PCIT, clinicians may ameliorate attention problems, both through changes in parenting behavior and through alleviation of parenting stress. Given that the relationship between attention problems and positive parenting by way of parenting stress was strongest for children with higher communication skills, such interventions may prove to be most successful with children greater verbal development. In sum, parent training and interventions targeting increased positive parenting and decreased harsh parenting behavior may have the potential to ease the burden of parenting stress and alleviate attention problems in children with ASD, while increasing their engagement during parent-child interactions.

Future Directions

The findings from this dissertation indicate a need for further research to enhance the understanding of attention problems as they relate to parenting and parent well-being in families of young children with ASD. Emerging findings suggest that parenting behavior may attenuate or exacerbate child attention problems in children with ASD. Given the observational nature of studying characteristics as they exist in clinical samples, two important additions to the literature are warranted. First, experimental studies that include random assignment and a comparison group in the design are enormously fruitful in better elucidating underlying causality between variables. As such, treatment studies that target increased positive and decreased harsh parenting behaviors are likely to help clarify whether and how parenting influences child attentional functioning in early childhood ASD populations. Second, longitudinal studies can help establish time order, and although this does not establish causality, it can help clarify a likely directionality between variables. Studies that examine parent and child factors in populations of children with ASD across a greater span of time also have the potential to further contribute to the understanding of the complex relationships between parenting and child functioning.

Future studies can further clarify the role of attention in early childhood ASD populations through clinical assessment and diagnosis of ADHD in addition to the use of gold-standard measures for ASD classification. A growing body of literature has investigated some parent and child factors using this approach, but these studies are largely limited to self-rated parenting stress and parent-reported child behavioral functioning thus far. By substantiating both clinical diagnoses, researchers may gain an

improved understanding of the clinical relevance of comorbid ASD and ADHD symptoms as they relate to parent-child interaction and parenting behavior. The clinical relevance of this endeavor is enormous, given that treatment studies are often limited to diagnoses in the absence of comorbid disorders. Further investigation of the potential impact of ADHD symptoms in young children with ASD can help identify optimal treatments to target the needs of these exceptional children and their families.

Parent psychopathology may also contribute to differences in parent-child relations in families of young children neurodevelopmental disorders (van Steijn et al., 2013). In light of this, future studies can expand upon the current findings by assessing parent broad autism phenotype and clinical ASD and ADHD symptoms. Ideally, such studies may include the use of both self-report and clinical assessment. The presence or absence of parent psychopathology is likely to influence child functioning as a result of biological and environmental factors. In addition to better understanding the influence of parent symptomatology on child functioning, parent psychopathology may also influence response to treatment, as many ASD and ADHD interventions involve a parent component.

Future research can also serve to extend and strengthen these findings by studying the variables of interest in a larger sample. This dissertation contributes to an otherwise understudied area of research on observed parenting and attentional problems in children with ASD using an exploratory approach. Nonetheless, it is limited by a small sample size and low power. The investigation of this topic in larger sample sizes would therefore also make an important contribution.

The current study is also limited in generalizability given the high degree of control over sample characteristics. While this offers an important strength to the design of this study by reducing variance across families in terms of level and access to services, examination of its flipside reveals a homogenous sample, which inherently limits the generalizability of findings to a broader population. Future studies can expand upon the present research by including participants with greater diversity in demographics, diagnostic severity, and verbal ability. The current study sample was drawn from a population receiving a high level of support. Therefore, the interpretation of the findings may be limited to similar populations.

Conclusion

A wealth of research has emerged in the face of rising rates of ASD. Studies investigating the spectrum of ASD presentations and effective methods to facilitate individual development across domains has flourished across time. The financial and psychological burdens associated with parenting a child with a developmental disability have been well described in the literature. However, the study of parenting behavior using direct observation, in addition to or in lieu of self-report questionnaires, has often gone unpursued. Few studies have investigated quality of parenting in this population by directly observing dyadic interactions. In light of this, this dissertation expands upon the existing literature through its exploration of parent and child characteristics as they relate to observed parenting behavior in mother-child dyads including preschoolers with ASD. Although some limitations are noted, the findings of this study contribute a great deal of information to the understanding of child attention as it relates to parenting in families of young children with ASD. Specifically, decreased positive and increased harsh parenting

were linked to greater parenting stress, increased child attention problems, and decreased child engagement during parent-child interactions. The relationship between parenting stress and observed parenting behavior was moderated by child negativity and verbal ability, suggesting that intervention appropriateness and effectiveness for young children with ASD may vary according to these child factors. In sum, when parenting quality varies in this population comprised of children who present with uniquely combined levels of verbal, behavioral, and interpersonal functioning, such differences in parenting are linked to real and measured outcomes for both parents, and their children.

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Appendix A

Inter-rater Reliability for Psychological Multifactor Care Scale – Autism Spectrum Disorder Adapted Version

Positive Parenting Variables (Cohen's Kappa)	Teaching Task	Free Play Task	Clean-Up Task
Mother's Supportive Presence	82.4%*	1.00	1.00
Mutual Pleasure	.86	.85	.55
Body Harmonics	.86	.61	.64
Mother's Mental Status	1.00	100%*	94.1%*
Mother's Emotional Response to Task and Situation	.85	.82	N/A
Quality of Instruction	.56	.63	.62
Respect for Child's Autonomy	.70	N/A	N/A
Strategies for Child's Task Involvement	.56	.45	0.86

Harsh Parenting Variables (Percent Agreement)	Teaching Task	Free Play Task	Clean-Up Task
Denying Emotional Responsiveness	94.1	100.00	100
Intrusiveness	100	82.4	N/A
Spurning	88.2	100	88.2
Terrorizing	94.1	100	100
Isolating	94.1	94.10	100
Corrupting/ Exploiting	94.1	94.10	100

Notes. Inter-rater reliability was calculated for 17 videos (38.6%) for all three tasks. * indicates percent agreement between raters on Positive Parenting tasks. Percent agreement was used when the statistic could not be calculated because one or both of the comparison variables was a constant (at least one rater gave all participants the same code for a variable). Percent agreement was used for all harsh parenting variables. N/A indicates this aspect of parent-child relationships could not be adequately evaluated with an ASD population in this sample on a specific task and does not apply.

Appendix B

Recruitment Letter

Improving Parenting and Enhancing Maternal Wellbeing in Mothers of Preschool Children

Having a preschool child can be stressful. In the past the Keller schools have offered parents training in how to teach a child. We would like to offer more support for parents as new research indicates that additional supports may improve parents and children's lives. We are working with parent coordinator, Barbara Kimmel, and parent educators at the Rockland campus, to collaboratively create a parenting support program with Keller parents. We can't do this without your help! To that end we invite you to participate in our research project on parenting preschool age children and its relationship to the wellbeing of their mothers.

Who is eligible to participate?

Moms who speak English and their 3-5 year old attending the Fred Keller school.

What is involved?

A one-time 70-minute session that includes the following parent activities:

a) 20 minute parent-child interaction task that incorporates some of the routine challenges of parenting – waiting, picking up toys, playing together, teaching your child, helping your child cope when mildly upset;
b) 40-50 minutes of questionnaires on child behavior, parenting, and your opinion about supportive programs for parents;

Are there benefits to taking part in the study?

There are no benefits to participation.

Will I be paid for my participation?

We will pay you $35 for your time.

Please consider participating in this study. If you have any questions about the study, please contact co-investigators, Marla Brassard, PhD, at 212 678 3368 or Laudan Jahromi, PhD at 212 678 3821.

Appendix C

INFORMED CONSENT

Research Title: Improving Parenting and Enhancing Maternal Wellbeing in Mothers of Preschool Children

DESCRIPTION OF THE RESEARCH:

If you speak English and are the mother of a 3-5 year old child attending the Fred Keller schools, you and your child are eligible to participate in a study of how observed parenting is related to mother's wellbeing and child characteristics in order to develop interventions for parents that improve parenting as well as enhance maternal wellbeing.

If you agree to participate you and your child will attend a one-time session that includes the following parent and parent/child activities:

a) 20 minute parent-child interaction task that incorporates some of the routine challenges of parenting – waiting, picking up toys, playing together, teaching your child, helping your child cope when mildly upset;

b) 40-50 minutes of questionnaires on child behavior, parenting, self-care activities such as your sleep, diet, exercise, alcohol use, and your opinion about the questionnaire and supportive programs for parents.

We will also record 4 pieces of information from your child's file at Keller:

a) the number of objectives your child met over six months of the school year on the CABAS® International Curriculum and Inventory of Repertoires for Children from Preschool through Kindergarten (C-PIRK);

b) the rate of your child's learning as measured by the ratio of learn units-to-criterion;

c) your child's level of verbal behavior development (e.g., listener); and

d) any educational or psychiatric diagnoses in your child's file (e.g., developmental delay, autistic spectrum disorder).

RISKS AND BENEFITS:

There are no direct benefits to participating in the study. There is no major risk to the research subjects. Minimal risk may include fatigue or boredom or discomfort if your child might get mildly upset. In addition, the questionnaire contains some very sensitive items, some of which may make you feel emotional discomfort. In instances when the researcher finds that you are at risk and in need of support, we have a psychologist present or on call and the researcher may also refer you to Fred S. Keller School social worker, Latasha Gamble, who will help you access resources in the lower Hudson Valley Region.

PAYMENTS:

We will pay you $35 for your time.

DATA STORAGE TO PROTECT CONFIDENTIALITY:

We will ensure your confidentiality by giving a unique identification number (and not name) to your and your child for your video, for your questionnaire, and for the information from the file review. This identification number is how we will record your information in our computer file for analyses. We will keep the identifiable consent forms in a separate, locked filing cabinet in the Co-PI's office, which will be kept separate from the de-identified data. After we record the information from your child's file we will destroy the link between your name and your identification number. No one affiliated with the Fred S. Keller School (FSK) will have access to the key linking your identity or that of your child to the unique identification number.

The videos and the computer file will be kept on a password protected and encrypted files in Professor Marla Brassard's office 529D Thorndike and Professor Laudan Jahromi's office 529I Thorndike. Only authorized members of the research staff will have access to this information. Information will only be used for professional purposes and will not include identifiable information.

TIME INVOLVEMENT:

Participation in this study will last approximately 60-70 minutes and will take place on one day.

HOW WILL RESULTS BE USED:

The results of this study will be used to design a parent support intervention for parents at the Keller Schools starting AY 2017-18, to write articles, and for dissertations. Feedback on overall results may be provided to the Fred S. Keller School. No feedback will be given on individuals.

ROLE OF THE PRINCIPAL INVESTIGATORS:

Co-Principal Investigators Laudan Jahromi, PhD (212 678-3321), and Marla Brassard, PhD, (212 678-3368) will work closely with Barbara Kimmel, Keller School parent coordinator and liaison, to make sure this research study is completed according to Institutional Review Board standards. For questions about the study, please contact the co-principal investigators at any time with questions.

PARTICIPANT'S RIGHTS

Co-Principal Investigators: Marla Brassard, PhD, Laudan Jahromi, PhD

Research Title: Improving Parenting and Enhancing Maternal Wellbeing in Mothers of Preschool Children

I have read and discussed the Research Description with the researcher. I have had the opportunity to ask questions about the purposes and procedures regarding this study.

- My participation in research is voluntary. I may refuse to participate or withdraw from participation at any time without jeopardy to future medical care, employment, student status or other entitlements.
- The researcher may withdraw me from the research at his/her professional discretion.
- If, during the course of the study, significant new information that has been developed becomes available which may relate to my willingness to continue to participate, the investigator will provide this information to me.
- Any information derived from the research project that personally identifies me will not be voluntarily released or disclosed without my separate consent, except as specifically required by law.
- For questions about the study, I can contact the Co-principal investigators Laudan Jahromi, PhD, 212 678-3821 and Marla Brassard, PhD, 212 678-3368 at any time.
- If at any time I have comments, or concerns regarding the conduct of the research or questions about my rights as a research subject, I should contact the Teachers College, Columbia University Institutional Review Board /IRB.
- The phone number for the IRB is (212) 678-4105. Or, I can write to the IRB at Teachers College, Columbia University, 525 W. 120th Street, New York, NY, 10027, Box 151.

- I should receive a copy of the Research Description and this Participant's Rights document.

- If video and/or audio taping is part of this research, I
  ( ) consent to be audio/video taped.
  ( ) do NOT consent to being video/audio taped. The written, video and/or audio taped materials will be viewed only by the principal investigator and members of the research team.

- Written, video and/or audio taped materials
  ( ) may be viewed in an educational setting outside the research (for example, at a research conference presentation or in a graduate level course). This is an optional, additional level of consent that does not affect your participation in the research study.
  ( ) may NOT be viewed in an educational setting outside the research (for example, at a research conference presentation or in a graduate level course). This is an optional, additional level of consent that does not affect your participation in the research study.

- ( ) I agree to be contacted for possible participation in an hour long parent-child interaction at FSK within the next year for which I will be offered additional payment and child care

( ) I do NOT agree to be contacted for possible participation in an additional parent-child interaction.

- My signature means that I agree to participate in this study.

Participant's signature: _____ Date:____/____/____

Name: _____
If necessary:

Guardian's Signature/consent: _____

Date:____/____/____

Name: _____

- My signature means that I agree to participate in this study.

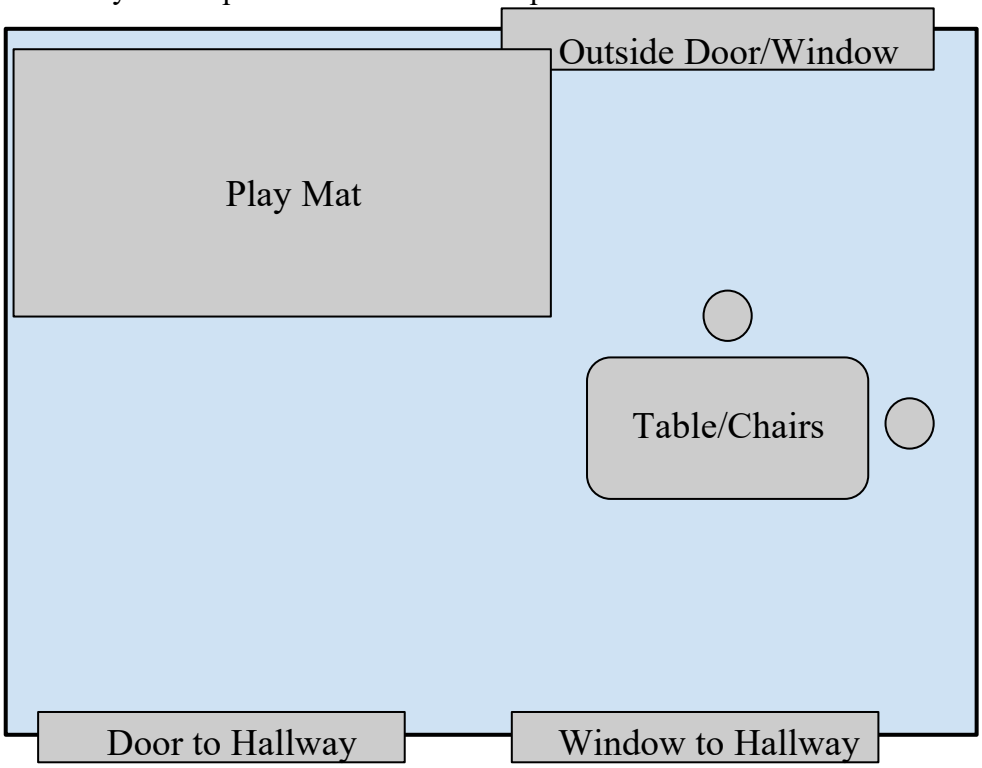
I am the parent /legal guardian of
_____and I voluntarily approve of his /her
participation and I agree to participate myself.

Guardian's Signature/consent:
_____Date:____/____/____

Name: _____

Appendix D

Room layout for parent-child interaction procedure. Not drawn to scale.



Appendix E

Script for Parent-Child Interaction & Video Feedback Tasks

Procedure and Instructions

CONSENT MEETING

On the day of the Interaction Task, the parent will sign the consent form. [Prior to the day of the Interaction Task, parents will have received a recruitment letter and a copy of the consent form. A project staff member will speak to the parent by phone to walk through the consent form and address their questions].

PARENT-CHILD INTERACTION

Setup
Empty room – with child table and 3 chairs
3 sitting at table

1) **Start recording video**.
2) **Parent Instructions.** The parent, child, and interviewer are seated at a small (child-sized) table. The interviewer has an iPad from which he/she reads the script. While opening up the script on iPad say, **"Ok, let's get started. What did we ever do before iPads? I have all my work saved on this one! ".** Next, tell the parent about the tasks. "**First you two will build something together. Which type of blocks are best for your child: wooden blocks, Duplos, or Legos?"** [Bring a Ziploc with the three block examples. Be sure to take it out with you when you leave the room for Competing Demands]. **"Then, I will bring in some toys and ask you guys to play for a while. After that, I will come back and hand you this sheet** [show parent the laminated clean-up sheet] **to remind you to ask your child to clean up. When I hand you this sheet, please wait until I leave the room, then ask your child to clean up.** [Hold up the sheet for the mom to read it. Point to the sentence about not cleaning up herself to highlight it for her]. **Finally, please do not use last names on the video"**.
3) **Competing Demands Task (5 minutes).** Tell the child, **"Ok, I'm going to go get some blocks. Your mom really needs to finish filling out these papers before I come back. I'll be right back!"** Hand the clipboard with the demographic questionnaire [including the question about the child's favorite prize for frustration task] to the parent and say, **"It would be really great if you could try to finish this form before I get back".** Leave an iPad on the table with a "work" document (Word or Excel file) open.
4) Go into observation room, start timer, & make notes regarding interactions that may be difficult to see on the camera. Return to the room after 5 minutes of Competing Demands.

5) **Structured Task (5 minutes).** Bring out the appropriate structured task [We will confirm items via piloting; ultimately we want three bins that each contain appropriate blocks and model picture]:
    a. Nonverbal children/very low functioning children and children with fine motor difficulties – use basic (non-interlocking) blocks
    b. Children 5-6 with disabilities? – Use Duplo's
    c. Children 3-5 typically developing and high functioning ASD? – Use Legos
6) **"Now I'd like you and your mom to build something together. Mom, please teach [child's name] how to build this [picture]. Here are the blocks and a picture of the model".** [Leave out the correct number of blocks to complete the model plus 10-15 additional blocks; no instruction book will be provided].
7) Go into observation room and continue to make notes about interactions that may be difficult to see on camera. If you see that the chosen blocks are not working for the dyad (too easy, too hard), go back into room with the appropriate alternative and say "Now, we're going to try these blocks instead" and take away the inappropriate block set. After 5 minutes of structured task go in the room. Congratulate child on a job well done (**"You did a nice job building!"**).
8) **Free Play Task (5 minutes).** Move the blocks to the floor during free play. Set up toys for free play [We will confirm items via piloting]:
    a. Small basketball
    b. Magna Tiles
    c. Papers and crayons
    d. Brio trains or cars
    e. Make-believe play (dr. kit, for younger children use doll house doll props,)
9) Instructions for free play – **"OK, let's move to the floor now. Try to face this way, if possible. Here are some toys I'd like you to play with for a little while".** Name each toy as you take it out of the bin, **"We have a basketball, some magna tiles, some paper and crayons, trains and cars, a doctor's kit…"**. Be sure to take all individual pieces out ; spill all the (8) crayons out, all the pieces of the doctor kit, all the magna tiles. Make sure the dyad is sitting facing the camera before you leave.
10) Go into observation room and continue to make notes about interactions that may be difficult to see on camera
11) After 5 minutes, enter the room and say, "**Hey guys, I forgot to give this to your mom"**. Hand the parent the laminated sheet indicating that the clean-up session is to start when you leave the room [Wording on sheet: "Please tell your child to clean up. Please don't clean up by yourself"]. When the interviewer closes the door, this marks the beginning of Clean-Up task.
12) **Clean-Up Task (2 minutes).** After the child has fully cleaned up the toys (or 2 minutes of clean-up task, whichever comes first), re-enter the room. If the child has not finished cleaning up, quickly help them finish the clean up.
13) Next, the interviewer enthusiastically tells the child **"You did such a great job today! I'm going to get you a prize!"** When the interviewer returns with the prizes, this marks the beginning of the frustration task.

14) **<u>Frustration Task (3 minutes).</u>** The interviewer enters the room (leaving the door open so that the second interviewer can enter quickly) and presents the child with a small bag of their favorite food snack item (e.g., goldfish, chips) saying, **"Thanks for doing such a great job! For doing such great work, I have some [goldfish] for you! I know how much you love [goldfish]!"** The interviewer hands the item to the child, immediately heads for the door, and as he/she exits, the second experimenter enters, announcing to the first interviewer "**Wait, you can't give him/her that"**. The second interviewer takes the snack from the child, and says directly to the child, **"I'm so sorry, but you can't have that".** The interviewer looks apologetically at both the child and parent and leaves the child and parent in the room for **3 minutes**. Go into observation room and continue to make notes about interactions that may be difficult to see on camera. If mom asks Interviewer 2 what she should be doing next, he/she will say **"Let me go check where [Interviewer 1] went".**

After 3 minutes, the 1st interviewer re-enters the room and says, **"Guess what? You can have the [goldfish] after all! You did such a super job today!"**

Appendix F

Psychological Multifactor Care Scale-ASD Preschool Version (Brassard, Donnelly, Hart, & Johnson, 2016; formerly PMRS; Hart & Brassard, 1986; Brassard, Hart & Hardy, 1993; PMCS-ASD version, Donnelly, Brassard, & Hart, 2014)

Teaching Scoring Sheet (revised 1.9.17)

Participant Code: _____

Rater: _____

Date: _____

Codes

Quality of Emotional Support

1. **Mother's Supportive Presence**
   1 2 3
   Comments:

2. **Mutual Pleasure**
   1 2 3
   Comments:

3. **Body Harmonics**
   1 2 3 4

   Comments:

4. **Mother's Mental Status**
   1 2 3 4

   Comments:

5. **Mother's Emotional Response to Task and Situation**
   1 2 3 4

   Comments:

6. **Parental Touching (circle all that occur)**

   0 1 2 3 4 5 6 7

   Comments:

7. **Denying Emotional Responsiveness**
   0 1 2 3

   Comments:

   Tally: Mild/moderate –
   Strong –
   Extreme –

Facilitation of Social/Cognitive Development

8. **Quality of Instruction/Structure**
   1 2 3

   Comments:

9. **Respect for Child's Autonomy**
   1 2 3 4 5

   Comments:

10. **Strategies for Maintaining Child's Task Involvement**
    1 2 3 4 5

    Comments:

11. **Parental Intrusiveness**
    1 2 3

    Comments:

Psychological Abuse

12. **Spurning**
    0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

13. Terrorizing
0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

14. Isolating
0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

15. Corrupting/Exploiting
0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

Child Codes

16. Child Negativity Toward Caregiver
1 2 3

Comments:

17. Child Experience of the Session
1 2 3

Comments:

18. Child's Level of Engagement

1 2 3 4

Comments:

19. Child's Engagement of Mother

1 2 3 4 4

Comments:

20. Child Aggression Tally

Physical –
Verbal –
Comments:

Code Explanations

Quality of Emotional Support

1. Mother's Supportive Presence (summary code)

A Mother scoring *high* on this scale expresses positive regard and emotional support to the child. This may occur by acknowledging the child's accomplishments on the task or unrelated task the child is doing (e.g., building a house of blocks), encouraging the child with positive emotional regard (e.g., "you're really good at this," "you got another one right") and various other ways of letting the child know that he/she has her support and confidence to do well in the setting. If the child is having difficulty on the task, the mother is reassuring and calm, providing an affectively positive "secure base" for the child, perhaps leaning closer to the child to give a physical sense of support.

A mother scoring *low* on this scale fails to provide supportive cues. She might be passive, uninvolved, aloof, or otherwise unavailable to the child. She may also appear impatient, as if she feels like the activity is a waste of her time and she rather be doing something else. Such a mother also might give observers the impression that she is more concerned about her own adequacy and how she is presenting to the camera, rather than displaying concern about the child's emotional needs.

A *potential difficulty in scoring this scale* is to discount messages of mothers that seemingly are supportive in verbal content but are contradicted by other aspects of communication (e.g., the mother seems to be performing a supportive role for the camera and not really engaged in what the child is doing or feeling). Signs of such questionable support are: improper timing of support, mismatch of verbal and bodily cues, and failure to have the child's attention in delivering the message. These types of supportive messages would not be weighted highly because such features suggest that the mother's supportive presence is not a 'sincere' aspect of their interaction outside the laboratory setting.

Conversely, the mother may seem more supportive than she appears in this situation because she has approached this task as a test of the child's achievement and has not used as much support as she might have. Yet, the qualitative features of her support would merit a high score.

Codes:

1. *Low* – Mother provides little or no emotional support to the child. The mother may be aloof and/or unavailable. She may also be hostile towards a child who shows he/she is in need of support. If support is displayed, it is minimal and not timed well, either being given when the child does not really need it, or only after the child has become upset. The consistency of this support may be uneven, so as to make the mother unreliable as a supportive presence.
2. *Moderate* – This mother does an adequate job of being available when her child needs support. She may lean closer as the child shows small signs of frustration and praise the child's efforts to show that she is available and supportive, but inconsistency in this style makes her support unreliable as a supportive presence to the child. Additionally, she may have failed to provide support at crucial times in the session (i.e., when support was needed by the child).
3. *High* – Mother skillfully provides support throughout the majority of the session. She establishes herself as supportive and encouraging toward the child and provides support when the child needs it. As the child experiences more difficulty, her support increases in commensurate fashion. If the child is having difficulty, she finds ways to structure the problem to reward some sort of success by the child and encourage whatever solution the child can make. She may have minor lapses, but for the most part, she is emotionally supportive and reinforces the child's successes.

2. Mutual Pleasure (summary code)

Dyad's emotional connectedness and shared experience of mutual pleasure.

Codes:

1. *Minimal* – The dyad shows no/minimal signs of a positive emotional connection. There are no shared smiles and there may be no mutual eye contact. Mother and child seem to be hesitant to share positive emotions or seem to be restricting positive emotional expression for some reason (e.g., silently angry). The mother and child show no signs of having fun together.
2. *Moderate* – The dyad shows some signs of positive emotional connection, however, the frequency and degree of positiveness is no more than moderate. Sharing of positive affect occurs, however, it is occasional in frequency, restricted in tone and/or duration, or a combination of these, and/or mother and/or child shows some restriction or hesitancy in sharing emotion. [Code "2" if the dyad is emotionally connected, but one or both members are not having fun; also Code "2" if there are a number of instances where one or both members of the dyad experience discomfort, boredom or frustration]
3. *High* – The dyad shows clear signs of a positive emotional connection, which are positive and enthusiastic in tone and occur regularly throughout the session. The

dyad may show frequent mutual eye contact or the dyad may show positive, enthusiastic sharing of positive emotions (e.g., "four-eyed" smiles). Neither the mother nor child shows signs of restricting emotional communication with each other. The mother and child seem to be having fun together. Also code 3 if both mother and child express interest and seem content, and no negativity, discomfort, boredom, or frustration is evident.

3. Body Harmonics (predominant mode)

Rate the predominant mode; rate body orientation, degree of "in-synctness" between the parent and child

*Note: For some tasks parents may be sitting next to or just behind their child, typically in order to both be oriented towards a toy/task, but are engaged in the same task. If this occurs as the predominant mode, code "4".

Codes:
1. Neither mom nor child oriented to the other (similar to parallel play)
2. Child oriented to mom, mom not orientated to child
3. Mom oriented to the child, child not to mom
4. Both oriented towards each other – mom oriented to the child, child to the mom

4. Mother's Mental Status (summary code)

*Note: A code of "2" or "3"does not indicate that the parent is at-risk of a mental illness; a code of "2" indicates that the parent is displaying one or more of the behaviors listed under a "2" or"3."

Do not consider an overall mode of "angry" or "impatience" if mother is using appropriate, firm limit setting in response to a child's inappropriate behaviors (e.g., throwing a toy, breaking a toy, and/or hitting a parent). However, if a parent uses a harsh tone, threatening voice, or threatening words while attempting to discipline/set limits, this *should* be coded here.

Codes:
1. Mother exhibits clear signs of mental distress and/or mental health problems (e.g., depression, hyperactivity, psychotic behavior, mania, etc.)
2. Mother's mood and/or behavior may angry or impatient, but shows no overt signs of mental illness
3. Mother's mood and/or behavior may appear anxious or distressed but shows no overt signs of mental illness
4. No mental distress or psychiatric impairment obvious to the observer

5. Mother's Emotional Response to Task and Situation (summary code)

Codes:

1. *Negative Response* - Overt negative response: bored, irritable, impatient (e.g., Mother says, "this stinks")
2. *Passive Response/Lack of Interest*- Passive or resigned (e.g., "OK, we have to do this"). Clearly no interest or enthusiasm but no overt negativity
3. *Business like* OR *mix of a positive and negative response* – Actively involved, but no positive or negative emotion displayed OR parent displays a mix of positive (e.g., expresses interest) and negative (e.g., signs of frustration or impatience) emotions.
4. *Positive* - Participates with interest and enthusiasm, and demonstrates occasional pleasure or enjoyment of the toys/task. Positive emotions can include expression of empathy and concern, not just pleasure and personal enjoyment.

6. Touching (<u>circle ANY that apply as present or absent</u>)

Code parental touch, not child touch – Specifically, if the child reaches out to touch the parent (in a hostile OR affectionate way), this is NOT coded. However, if the parent reciprocates/responds in any way, this should be coded. Tally the frequency of each type of touch.

Codes:

1. No touch/inadvertent touch (e.g., fingers brush as both reach in to get a toy)
2. Hostile touch (pinching, hitting, slapping, tightly gripping)
3. Touching to control (e.g., hold down, direct, lift physically into a chair, hold down to control an out of control child, hold to control child's movement; if for example the child began hitting themselves, and the parent held both of the child's arms down at their sides to keep them from hurting themselves)
4. Touching to encourage or appropriately prompt/direct child's attention (e.g., tap on shoulder before pointing to an object)
5. Touching to make child attend (e.g., including moving the child's face or putting "blinders" on the child to direct them to make eye contact)
6. Touching to direct by using hand over hand (e.g., parent puts their hand on top of their child's hand and moves the child's hand)
7. Affectionate touch (no seductive overtures; e.g., giving a hug, touching child's hair)
8. Other touch (if you see any other type of touch, code 7 and note what you saw)

7. Denying Emotional Responsiveness (code based on amount of incidents observed)

Coding judgments regarding negative acts by parent/caregiver (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

1. Non occurrence
2. One to two mild-moderate acts
3. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
4. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than extreme)

Judge acts, not intentions or consequences. Don't judge on basis of a hypothesis or general point of view you've formed, put down what you see even if there is contradictory evidence (accepting and rejecting behaviors).

Keep tallies for mild/moderate, strong, and extreme behaviors.

*Note: Body posturing is included in this code.

If child makes explicit-direct-overt demands/requests (including affective, cognitive and motor demands and/or requests), a parent who denies emotional responsiveness may respond by ignoring, behaving in detached/uninvolved manner, failing to respond, avoiding interaction, or refusing to interact

If child makes implicit-indirect-covert needs/requests (including affective, cognitive, and motor needs/requests), a parent who denies emotional responsiveness may respond by ignoring, behaving in detached/uninvolved manner, failing to respond, avoiding interaction, or refusing to interact

Additionally, unavailable posturing of parent would discourage a child from seeking a response and would also be considered denying emotional responsiveness.

Examples of this are listed below:
Mild –

- Child says "this is fun" or "this is hard" and Mom shows no response
- Child seems worried (frown, body posture, nervous behaviors) and mother shows little to no response
- Mom attending to child – eye contact and posture – is at low level under conditions where more would be expected
- Mom attending to child, but arms crossed (e.g., if mom crosses her arms in response to child during a critical period or sustained arm crossing or consistently displays this posture throughout the interaction)

Moderate –

- Child says "how do you do this?" or "I don't understand" and must repeat it several times to get a response or takes a while for the parent to respond (i.e., prolonged time before response)

- Child appears very elated/excited or worried/depressed about what she/he's just done or will do next and mother shows little to no response (e.g., Child is very excited about the toys/task and the parent shows little to no response)
- Mom tends *not* to look, touch, or talk to child unless child presses strongly for attention

Strong –

- Child makes requests or asks for help and mom does not respond at all or lets child know child is on his/her own by saying "go on working" or " you figure it out"
- Mom doesn't respond to child's reasonable but non-task oriented requests – "I'm thirsty" or "I want a drink"
- Child visibly shows very strong reaction to situation (e.g., cries, shakes, throws materials down) and mother does not respond
- Mom maintains body orientation and posture away from child's position in an unusual or awkward way that doesn't fit – and other options are available (e.g., Mother actively turns her whole body away or keeps face averted)

Facilitation of Social/Cognitive Development

8. Quality of Instruction/Structure (summary code; structured)

The important feature of this rating are how well the mother structures the situation so that the child knows what the task objectives are and receives hints or corrections while attempting to build a home. These hints or corrections are: a) timely to his/her current focus, b) paced at a rate that allows comprehension and use of each approach/cue, c) graded in logical steps that the child can understand, and d) stated clearly without unnecessary digressions to unrelated phenomena or aspects of the task that might only confuse the child. The mother's approach suggests that she has some sort of plan for how her instructions/structure will help the child. Yet, she is also flexible in her approach and uses alternative strategies or rephrases suggestions when a particular cue is not working, and she coordinates her suggestions to the effort that the child is making to solve the task. Lastly, she keeps the child focused and helps them to attend to the task. If the child begins to go off task (begins to build a car) she helps to bring the child back to the task at hand (building a house).

Codes:

1. *Low- Lack of/poor instructions/structure*. Minimal instructions/structure is given. Most attempts (if any) are ineffective. Child may not understand what to do or what is expected of him/her due to lack of instructions. And/or the mother's attempt to structure the child's environment/instructions are uniformly of poor quality (i.e., poor timing/pace, incomprehensible, no scaffolding, etc.). She is either totally uninvolved or fails to structure the tasks effectively.
2. *Moderate – Adequate instructions/structure*. Mother provides adequate structure and instruction for the child to work on the tasks during much of the session, but overall, her structure/instruction is lacking at several points in the session. Alternatively, the mother may approach the tasks in a way that is very structured,

but requires the child to attend primarily to her directives and allows little opportunity for the child to engage the task/toys directly. She may also provide a mix of good and bad instructions/structure (some sufficient instructions/structure (e.g., suggestions when the child is having difficulty) with poor instructions/structure (e.g., giving very fast paced directives) as well.

3. *High – Effective, continuous, and appropriate instructions/structure*. Mother demonstrates most characteristics of effective instruction/structure consistently throughout the session. The tasks are sufficiently structured so that the child understands the objectives and can attempt to solve the problems directly. Mother's assistance is coordinated to the child's activity and needs for assistance. For the most part, the mother keeps the child's attention and focus on task.

9. Mother's Respect for Child's Autonomy

This scale reflects the degree to which the mother acted in a way that recognized and respected the validity of the child's individuality, motives, and perspectives in the session.

A mother scoring *low* on this scale would be very intrusive in her interventions with the child, exerting her expectations on the child in a way that makes the child a satellite or servant of the mother rather than a mutually negotiated relationship, or implicitly defining her interactions in terms of a win-lose power struggle in which compliance by the child makes the mother the winner and the child submissive. Mothers may intrude either harshly or with affection; in either case, her actions do not acknowledge the child's intentions as real or valid and communicate that it is better and safer to depend on her for direction than to attempt individuality.

In contrast, a mother scoring *high* on this scale acknowledges the child's perspectives and desires as a valid part of the child's individual identity. A mother scoring very high does this explicitly by negotiating rules with the child, verbalizing her acknowledgement of the child's intentions, does not deny the child's right to those desires, and models her own identity and the validity of her own desires in the way she expects the child to respect her individuality, too. Note: Mother can get a low score just by denying the child's individuality strongly (e.g., interrupting the child, doing things before the child can on his/her own, etc.) even though it is not interrupting the child's behavior.

Codes:

1. *Very Low* – Mother completely denies the child's individuality in the techniques she uses. Mother may be intrusive, physical, and forceful in controlling the child.
2. *Low* – Mother may deny the child's individuality, but there are a few opportunities for the child to experience autonomy, whether by variation in mother's approach or simply by occasional absence of maternal controls over the child. Mostly, however, this mother's style denies the child's autonomy and mother is intrusive.
3. *Moderate* – Mother is moderately intrusive. Although mother does not deny the child's separate identity, she does very little to support the validity of the child's

individuality. She might communicate doubts to the child about the appropriateness of having his/her intentions, or intrude abruptly on the child several times.

4. *Moderately High* – Mother does allow the child some autonomy of intentions, but she does not actively support and reinforce this perspective in the child. She may reflect the child's intentions and ideas by engaging the child, but she also exerts her will at times over the child in a way that shifts the child's perspective.
5. *High* – Mother very clearly interacts with the child in a way that acknowledges the validity of the child's perspective, encourages the child to take the lead/participate

10. Strategies for Maintaining the Child's Task Involvement (predominant mode): This scale reflects the methods used by the mother to encourage and maintain task involvement on the part of the child. The parent's use of verbal reinforcement (positive and negative) is paramount in this item. Parents are rated *higher* when they involve the child in the task and in the enjoyment of the process of working together. They are rated *higher* for more specific praise versus nonspecific praise. They are rated *higher* for using praise versus bribes or threats to engage the child. Parents who have a child who is noncompliant are not automatically rated lower if they respond appropriately by trying other strategies until the child cooperates or they decide that the task cannot be continued.

Rule: If are between 2 codes and you have seen signs of threats, manipulation or coercion in order to promote the child's involvement, code the lower of the 2 codes (even if some positive methods are used).

Codes:

1. *Lack of effort/Threatening* - Parents may receive the lowest score in 2 ways: either little or no effort is made to involve the child in the task OR Physical and verbal threats are used to promote the child's involvement in the task as in, "Do this or else!" Punitiveness is the major strategy for control – the child is coerced to act to avoid unpleasant behaviors by the adult.
2. *Manipulation/Coercion* - Parental bribery or whining the primary strategies used to promote the child's involvement. Rewards not associated directly with the task are given or promised to get the child to participate. Examples: "You'll (We'll) get ice cream if we can finish this game, job, etc.," or parent nags and/or whines until the child complies (e.g., in a whining voice says, "Come on, help me, I want to do this well"). **Note, the parent may use other ineffective strategies, such as intrusive questions or directives, as well, but those are not the only strategies used.
3. *Directives only* - Clarifying, giving information, and directing the task are the methods used to enlist child involvement. No praise, no threats, and no bribes are used. For example, a parent may give step-by-step instructions to a low functioning child, and not threaten or praise either.
4. *Information and non-specific praise* - Clarifying structure and giving information about the task process are used to prompt and enlist the child's involvement, such as, "this goes next," "it's your turn," "look here." Additionally, the parent may

use non-specific praise and global feedback to promote the child's involvement in addition to verbal prompts and structuring information. "Good girl," "nice building," and "perfect" are examples of non-specific praise. Alternatively, the parent may demonstrate clear interest (e.g., paying attention to the child, commenting, asking non-intrusive questions, saying "Ohhh" and "Ahhh"), but not give praise. If parent demonstrates clear interest without giving praise, also code this here. In addition, the parent may also ask the child questions or make statements to help maintain their involvement. This item encompasses a parent who uses a variety of different strategies, but no coercive, manipulative, or threatening strategies.

5. *Specific praise* – At *least* one instance of specific praise is observed. The parent provides specific, positive, and well-timed references to the child's effort and effectiveness are used to get and maintain the involvement of the child. The parent primarily highlights special task qualities of intrinsic interest to the child to stimulate the child's involvement. Mother also provides some verbal prompts and structuring information. Examples for the structured task include: "Very good, I like how you are placing the pieces so carefully so the house does not fall," "Good girl- that's a great placement for the door," and "you're working hard – we've got a good chance of finishing this soon" are examples for the structured task.

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14. Parental Intrusiveness Modified for ASD sample Keller Study 12.22.16 for teaching and Free Play, not for Cleanup

This scale reflects the degree to which the parent exerts control over the child rather than acting in a way that recognizes and respects the validity of the child's perspective. Intrusive interactions are clearly adult-centered rather than the child-centered. Extreme intrusiveness can be seen as over-control to the point where the child's autonomy is at stake. When unsure whether a behavior is intrusive or not, focus on the *perspective of the child*.

Intrusive behaviors involve imposing the parent's agenda on the child despite signals that a different activity, level or pace of interaction is needed. High arousal, vigorous physical interaction or a rapid pace are not in and of themselves indicative of intrusive over-stimulation - if the child responds positively and is not engaging in defensive behaviors. It is when the child averts his/her gaze, turns away, or expresses negative affect *and the parent continues or escalates* that the behavior is intrusive. Intrusiveness is also apparent when the parent persists in demonstrating a toy to the child long after the child's interest has been gained and the child clearly wants to manipulate the toy him/herself. These parents appear unable to relinquish control of the interaction in order to facilitate the child's exploration or regulation of the activity. Intrusiveness may also be displayed by overwhelming the child with a rapid succession of toys or suggestions, without allowing the child time to react to one before another occurs.

In contrast, a parent scoring low on this scale acknowledges the child's perspective. This parent allows the interaction to be the child-centered rather than adult-centered. The parent modulates her/his behavior in response to the child's interest and enjoyment and allows the child to explore and play at his/her own pace.

Keep in mind that a parent can become involved in the child's play without denying his/her autonomy or being intrusive. In addition, parental actions which are clearly in the child's best interest, such as removing the child from danger are not considered intrusive. Likewise, parental behaviors that are in accordance with protocol instructions, such as bringing the child back to the mat or turning the child toward the camera, will not be judged as intrusive unless the child is handled in a rough or perfunctory manner.

Indicators of Intrusiveness:

- Persisting with an action that clearly does not interest the child (e.g., parent continues with a behavior that makes the child turn away, act defensive, or express negative affect)
- Offering a continuous barrage of stimulation or toys
- Not allowing the child to influence the focus or pace of play
- Not allowing the child to handle toys that he/she reaches for
- Grabbing toys away even though the child is still interested
- Not allowing the child a turn or an opportunity to respond at his/her own pace
- Not allowing the child to make choices
- Poking the child with toys, fingers, or other object(s)

Ratings on this scale should be based on both *quantity* and *quality* of parental behavior.

Parental Intrusiveness Scale:

1. **Low** Intrusiveness. Parent displays no or almost no signs of intrusive behavior. If a few instances of intrusive behavior are observed they are brief and do not unreasonably shift the child's perspective (e.g., slightly abrupt transition from one task to another, briefly taking a toy, or brief magna doodle conflict). Child does not respond defensively in any way to parental behavior.

2. **Moderately** Intrusiveness. Parent displays some intrusiveness. Parent may initiate some interactions with child or offer suggestions to child which are not welcome (e.g., abruptly introducing a new activity/toy when the child is clearly enjoying a different activity/toy), evidenced by child protesting or responding defensively to parent. Or, parent may continue her/his activity after child responds defensively, but parent does not *escalate* the activity (e.g., the parent continues to stir with spoon after the child has pushed the parent's hand away; *NOTE*: *escalating* the behavior would be insisting that the child stir with spoon or *increasing* demands that the child engage in a behavior).

3. **High** Intrusiveness. Parent displays intrusiveness more often than not throughout the session. Parent intrudes abruptly on the child or show intrusiveness at several points in the interaction. The child has few, if any, opportunities to experience autonomy, whether by variation in the parent's approach or simply by occasional absence of parental control.

Psychological Abuse

FOR ALL CODES IN THIS CATEGORY:

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

1. Non occurrence
2. One to two mild-moderate acts
3. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
4. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Judge acts, not intentions or consequences. Don't judge on basis of a hypothesis or general point of view you've formed, put down what you see even if there is contradictory evidence (accepting and rejecting behaviors).

Keep tallies for mild/moderate, strong, and extreme behaviors.

12. Spurning (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

1. Non occurrence
2. One to two mild-moderate acts
3. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
4. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Active rejecting and/or degrading through words, gestures, and/or other behaviors. Spurning includes, belittling, degrading, and other nonphysical or overly hostile/rejecting treatments used towards a child. Shaming and/or ridiculing a child are also included in this code. Score mother's contempt towards the child here. Do not score appropriate limit setting here (for example, if child is throwing toys or hitting and the parent tells them to calm down or stop their behavior).

Examples:

Mild –

- "Are you frustrated already?"
- "This will be hard for you" (unjustified by situation)
- "I'd better do this part for you" (unjustified by situation)
- Frowning at child's efforts while allowing him/her to continue.
- Mild shaming (publicly teasing). For example, "Make sure you make a room for all the messy toys and clothes" (while child builds a house)
- Parent may tell the child to stop crying
- Parent may say, "Put a smile on it, honey" when the child looks upset
- Continuing to talk over a child as they try to express an idea (even if the parent is not being mean towards the child). Another way to conceptualize this is to think of the parent "rejecting" their child's idea by not letting the child express their idea.

Moderate –

- "Let me do it, you'll mess it up"
- Makes facial expression of disbelief for child to see as reaction to child's attempt
- Parent tells a child that they are not experiencing a specific emotion (e.g., mother says, "no, you're not sad")

Strong –

- "Keep your hands off – you'll screw it up!"
- "You just watch – we want to do it right"
- "Come on stupid – can't you get it?
- "You're a real loser, aren't you?"
- Laughs mockingly at child's error or attempt
- Shaming. For example, making fun of the child's bedwetting problem
- Parent firmly and repeatedly tells a child to cease displaying a specific emotion
- Parent makes fun of a child for displaying a specific emotion

13. Terrorizing (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

1. Non occurrence
2. One to two mild-moderate acts
3. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
4. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

*Note: Voice quality is included in this code

Key concept: Judge act(s) in regard to its threat or danger to the average child of the target child's development level in the mainstream culture.

Threaten child with violence.
Threatening violence against child's loved ones (other family members) or objects (comfort toys or favorite toys).
Physical attack on/act of violence directed toward child.
Place child in an unpredictable, chaotic, or frightening situation (at the extreme, placing the child in a recognizably dangerous situation).
Examples:

Mild –

- "You'd better behave"
- Abrupt – harsh voice quality *(not to be confused with a firm loud "No" in a non-harsh tone to stop inappropriate behavior that needs to be terminated right away such as coloring with a crayon on Magna Doodle, throwing toys)*
- In a harsh voice says, "put that back!"

Moderate –

- "You know what will happen to you if you don't straighten up"
- Tightens body posture and facial expression in threatening and observable manner for child
- Thrusting/pointing index finger toward child to influence behavior

Strong –

- Slams fist down on table
- Menacing gestures made toward child – facial expression, growl, fist shaking
- Grabs child physically and exerts physical pressure in a manner that is too rough and overly controlling
- Threats of physical harm at child such as "I'm going to whip you in a minute."

14. Isolating (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

1. Non occurrence
2. One to two mild-moderate acts
3. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
4. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Physically isolate/confine (confining child or placing unreasonable limitation on freedom of movement)
Socially isolate/confine (placing unreasonable limitations/restrictions on social interactions with peers or adults – this may be done verbally in the session)

Actively terminate communication.
Examples:

Mild –

- Preoccupied with keeping child in seat
- Very little conversation initiated by mother

Moderate –

- Lack of initiation or response - Mom doesn't initiate talk and only talks to child when child initiates conversation (including gestures, tapping, or sound)
- Tries to keep child from communicating with others present (e.g., examiner)
- Tries to keep child from normal movement in his seat while on task

Strong –

- Says "stop talking" or "don't talk while you're working" when the child initiates or attempts to make social contact
- Refuses to allow child freedom to get drink or go to toilet when request/need is expressed with no acceptable rationale given
- Mom is in parallel play mode throughout most of process with little to no interaction or mutually facilitating behavior shown
- Keeps child from contact with others when they enter the room by using own body as shield, by dominating all interactions
- Context seems to demand conversation, and none occurs

15. Corrupting/Exploiting (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

1. Non occurrence
2. One to two mild-moderate acts
3. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
4. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Key Concept: Code based on observations of the parent leading the child away and astray from the task.

Using a child in ways serving the adult, and not the child, or meeting own needs in ways directly interfering with child's attempts to meet his/her needs encouraging or coercing abandonment of developmentally appropriate autonomy, and/or extreme over-involvement
Actively encouraging/teaching anti-social, self-harming, or developmentally inappropriate behavior
Modeling/demonstrating behavior, which is anti-social, self-harming, or developmentally incorrect/inappropriate

Allowing child behavior, which is anti-social, self-harming, or incorrect/inappropriate
Restricting or interfering with the child's cognitive development.
Examples:

Mild –

- Doesn't instruct child – simply lets child watch and participate in way unlikely to be understood
- Says, "it doesn't matter how we do this, just so we get it done"

Moderate –

- Plays with/manipulates materials in a manner interfering with the child's opportunity to participate or move forward on task.
- Models/demonstrates inefficient or incorrect procedure for handling task
- Shows little to no interest in having the child learn throughout the session.
- Seems only interested in getting it over and getting the task done
- Gives child role of "mom's assistant" below child's competency or level of potential for learning by trying
- Allows child (without corrective follow-up) to use foul language or make statements degrading self or others
- Parent takes over and directs the child's activities (e.g., the parent tells the child exactly what to do)
- The parent does not allow the child to come up with his/her own ideas of how to tackle the task at hand (e.g., the parent may fire questions/directives at the child in a way that does not allow child to come up with his/her own ideas)
- Limits child's participation to holding tools/parts for mother and mother only allows child to take responsibility for lowest level of task.

Strong –

- Says "this is stupid – let's get it over with"
- Uses strong language that degrades others
- Encourages child to use foul language, make degrading statements, or engage in other inappropriate behavior (e.g., by smiling or laughing)
- Mother demands a shift in attention to her own topics in a way that hinders the child's development (takes child away from the task) and persists in this shift in attention (e.g., mother insists that the child discuss their babysitter's cell phone habits as the child builds a house).
- Parent interferes with the child's learning and child's experience of the session by interrupting the child and asking/making task-irrelevant questions/comments to the point that it's difficult for the child to think (e.g., as the child is determining where to put a window in their toy house, the parent asks off-topic questions that make it difficult for the child to think)
- Pulls building materials from child's grasp and places in her work area

Child Codes

16. Child Negativity (summary code)

*** Remember, this is child negativity directed at the *caregiver***

Degree to which the child shows anger, dislike, or hostility toward the mother. At the high end, the child is repeatedly and overtly angry during the session and/or at the mother (e.g., forcefully rejecting her ideas, showing angry and resistant expression, pouting, or being unreasonably demanding or critical of her). At the low end, there are neither overt nor covert signs of such anger. Expressions are essentially positive toward mother/within the session whether or not the child is compliant or much involved with the mother.

Rule: If it is unclear if the child is acting negative towards the mother or the task, do not code the behavior here.

Codes:

1. *Positive* (i.e., no signs of negativist towards mother)- Child shows no signs of negativism towards the mother. She/he shows through consistently positive interactions toward the mother that she/he has a truly positive relationship toward the mother/within the session and feels no abiding anger toward the mother/within the session. [Code here if there are no clear negative signs towards the mother, even if no clear positive interactions are evident.]
2. *Mix of negative and positive* - Child shows a mix of negativism and positivism towards the mother. Neither negativism nor positivism is predominant in the interaction; there is a mix of both negative and positive interactions.
3. *Negative towards mother*- Child's anger and negativism are predominant in the interaction between the child and mother. The child is repeatedly and overtly angry and resistant during the interaction. The degree of anger seems so strong that the child cannot disguise it in subtler ways for long, but it repeatedly appears in his/her interactions.

17. Child's Experience of the Session (summary code)

This scale reflects the degree to which the child's experience in the session probably resulted in feelings of success and competence on the tasks and confidence in having a good relationship with his/her mother. This scale reflects a variety of contributions in the child and mother's behavior, which might contribute to the child's experience of session. A child scoring low on this scale might have had many conflicts with his/her mother or might have been dominated or been rejected by the mother in ways that would affect the child's experience of success in the session. A child scoring high on this scale would have been able to work well with the mother *and* to do the tasks successfully with some sense of autonomy in problem-solving through appropriate maternal assistance in the session.

1. *Low* - Child had a very negative experience which probably contributed to lower expectations of his/her own competence, anger at self or mother, rejection by the

mother, or intense resistance between mother and child. There was very little in the session to compensate for these negative events. Almost no good or only one good instance of positive experiences in the session.

2. *Moderate* - A mix of positive and negative instances throughout the session. The session may be a moderately negative experience for the child, but overall, neither a success nor a failure experience of the child; *OR* The child seemed to get through the session with success and basically have positive interactions with his/her mother, but there might have been some minor aspects in which the child or mother's contributions may have been deficient in helping the child feel success. For example, the child may have success in the task, but not display a good relationship with their mother, or vice versa.
3. *High* - The child has a very positive experience of doing well on the tasks and having a good relationship with his/her mother. There were very positive interactions between the mother and child, and the child was able to do the tasks with enough help and enough autonomy to experience competence in doing the tasks. Although minor problems in the session might have occurred, the overall effect of the mother and child's interactions was very positive in terms of the child's experience of success and confidence in the relationship. [A child who seems content/happy throughout the session regardless of interactions with their parent (e.g., a child who works independently and does not seem to care if the parent participates), should get coded here.]

18. Child's Level of Engagement in the Task *(Use stopwatch to calculate percentage of time off task relative to total time counted from exit of Experimenter to return of Experimenter)*

This scale reflects the degree to which the child is engaged in either the task or participating with the mother on the task during the session. Code for child's actual level of engagement with the task not the mother's efforts to keep the child engaged.

1. *No Engagement* - Child shows little or no interest in engaging in the teaching task with the mother and this is consistent throughout the session (less than 25% of the time).
2. *Low Engagement* - Child shows some interest in participating in the task but it's not consistent and child is unengaged or resistant for over half of the time (25-49% of the time).
3. *Moderate Engagement* - Child is engaged in the task for more than half but not all of the session. There are clear moments of disengagement demonstrated by the child (50 to 75% of the time).
4. *High Engagement* - Child is almost continuously engaged in the task – there may be moments where attention wanders but they are brief and intermittent (more than 75% of the time.).

19. Child Engagement of Parent (12/22/16)

This scale reflects the extent to which the child (a) shows, initiates, and/or maintains interaction with the parent and (b) communicates positive regard and/or positive affect to the parent.
At the higher end of the scale, the child expresses sustained positive affect toward parent (i.e., a big smile, laughter, etc.), and frequently looks at and attempts to interact with the parent.

Indicators of Child Engagement:

- Approaching or orienting toward parent
- Looking at, establishing, and/or maintaining eye contact with the parent
- Positively responding to parent's play initiations or suggestions (e.g., imitating parent, accepting toy from parent, following parent=s direction)
- Directing or (at a higher level) sharing positive expressions with parent
- Engaging parent in play or sustaining play initiated by parent (e.g. offering an object, requesting help, turn-taking)

Indicators of Child Disengagement:

- No sharing of affect with parent
- Overt rejection of parents play overtures
- Pushing offered objects away
- Positioning or orienting away from the parent
- Engaging in self-occupied play which excludes the parent
- Ignoring suggestions from parent

The focus of this scale is on the *quantity* (frequency) of occurrences in which the child shares positive affect with parent (i.e., looking at parent, making eye contact and smiling, and other "approach" behaviors) and or percentage of timer engaged cooperatively with the parent. When scoring this scale, keep in mind that the *quality* (intensity) of expression is secondary to the *quantity* of occurrences.

Child Engagement Scale:

1. **Very Low** Engagement. The child clearly does not attempt to share experiences with parent. Failure to make eye contact with parent when expressing happiness, directing expressions of happiness to the experimenter rather than to the parent, and similar behaviors can be used as evidence that the child attempts little sharing of feelings with parent.

2. **Low** Engagement. The child has very minor incidents which seem expressive of positive regard toward parent and from which one might infer that some positive feelings are expressed toward her. However, the child largely shows no positive regard toward parent and rarely responds to parent or attempts to engage or sustain play (or cleanup or task involvement) with him/her.

3. **Moderate** Engagement. The child shares some positive regard/happy expressions with parent and/or makes some attempt to engage or sustain play (or cleanup or task involvement) with parent, but these few and only minor elements of interaction and are not sustained by the child for more than a moment at a time. Likewise, the child may include parent in play (offer a toy, imitate pretend, etc.) or cleanup or the teaching task, but the engagement is not sustained for very long.

4. **Moderately High** Engagement. The child has one or more periods in which s/he engages the parent by expressing positive regard, sharing happy expressions or by sustaining play (or cleanup or task involvement) with the parent or engaged in sustained cooperative interaction with the parent. The child expresses positive affect toward and engagement of the parent for at least one portion of the interaction.

5. **High** Engagement. The child demonstrates a very positive, engaging and sharing relationship toward the parent for a substantial period of the session. Sustained play (or cleanup or task involvement) is accompanied by positive regard toward the parent. The child is consistently engaging of parent and the child's relationship with parent seems very warm and positive for a major portion of the session. There is no ambivalence in the child's expression of feelings toward the parent.

20. Child Aggression Tally (code based on amount of incidents observed)

Tally if the child displayed any verbal or physical aggression.

No symbolic aggression (e.g., eye rolls) will be coded.

Verbal aggression includes yelling at parent or verbal threats (e.g., "I hate you").

Physical aggression includes hitting, pinching, or kicking the parent. Physical aggression also includes throwing objects, throwing objects at the parent, breaking or destroying toys/equipment or using an object to hit the parent. Physical aggression also includes attempts at aggression (for example, if the child attempts to hit their parent, but misses).

Please also note what type of aggression was observed by listing exactly what was seen (i.e., child hit parent with Legos).

NOTES (ANY TIME YOU HAVE A HARD TIME CODING, MAKE A NOTE WHY):

_____

_____

_____

_____

_____
_____

Free Play Scoring Sheet (revised 1.9.17)

Participant Code: _____

Rater: _____

Date: _____

Codes

Quality of Emotional Support

11. Mother's Supportive Presence

1 2 3

Comments:

12. Mutual Pleasure

1 2 3

Comments:

13. Body Harmonics

1 2 3 4

Comments:

14. Mother's Mental Status

1 2 3 4

Comments:

15. Mother's Emotional Response to Task and Situation

1 2 3 4

Comments:

16. Parental Touching (circle all that occur and tally total for each type of touch)

0 1 2 3 4 5 6 7

Comments:

17. Denying Emotional Responsiveness

0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

Facilitation of Social/Cognitive Development

18. Quality of Instruction/Structure

1 2 3

Comments:

19. Respect for Child's Autonomy

1 2 3 4 5

Comments:

20. Strategies for Maintaining Child's Task Involvement

1 2 3 4 5

Comments:

21. Parental Intrusiveness

1 2 3

Comments:

Psychological Abuse

22. Spurning

0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

23. Terrorizing

0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

24. Isolating
0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

25. Corrupting/Exploiting
0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

Child Codes

26. Child Negativity Toward Caregiver
1 2 3

Comments:

27. Child Experience of the Session
1 2 3

Comments:

28. Child's Level of Engagement
1 2 3 4

Comments:

29. Child's Engagement of the Mother
1 2 3 4 5

Comments:

30. Child Aggression Tally

Physical –
Verbal –
Comments:

Code Explanations

Quality of Emotional Support

5. Mother's Supportive Presence (summary code)

A Mother scoring *high* on this scale expresses positive regard and emotional support to the child. This may occur by acknowledging the child's accomplishments on the task or unrelated task the child is doing (e.g., coloring a picture), encouraging the child with positive emotional regard (e.g., "you're really good at this," "you got another one right") and various other ways of letting the child know that he/she has her support and confidence to do well in the setting. If the child is having difficulty on the task, the mother is reassuring and calm, providing an affectively positive "secure base" for the child, perhaps leaning closer to the child to give a physical sense of support.

A mother scoring *low* on this scale fails to provide supportive cues. She might be passive, uninvolved, aloof, or otherwise unavailable to the child. She may also appear impatient, as if she feels like the activity is a waste of her time and she rather be doing something else. Such a mother also might give observers the impression that she is more concerned about her own adequacy and how she is presenting to the camera, rather than displaying concern about the child's emotional needs.

A *potential difficulty in scoring this scale* is to discount messages of mothers that seemingly are supportive in verbal content but are contradicted by other aspects of communication (e.g., the mother seems to be performing a supportive role for the camera and not really engaged in what the child is doing or feeling). Signs of such questionable support are: improper timing of support, mismatch of verbal and bodily cues, and failure to have the child's attention in delivering the message. These types of supportive messages would not be weighted highly because such features suggest that the mother's supportive presence is not a 'sincere' aspect of their interaction outside the laboratory setting.

Conversely, the mother may seem more supportive than she appears in this situation because she has approached this task as a test of the child's achievement and has not used as much support as she might have. Yet, the qualitative features of her support would merit a high score.

Codes:

4. *Low* – Mother provides little or no emotional support to the child. The mother may be aloof and/or unavailable. She may also be hostile towards a child who shows he/she is in need of support. If support is displayed, it is minimal and not

timed well, either being given when the child does not really need it, or only after the child has become upset. The consistency of this support may be uneven, so as to make the mother unreliable as a supportive presence.

5. *Moderate* – This mother does an adequate job of being available when her child needs support. She may lean closer as the child shows small signs of frustration and praise the child's efforts to show that she is available and supportive, but inconsistency in this style makes her support unreliable as a supportive presence to the child. Additionally, she may have failed to provide support at crucial times in the session (i.e., when support was needed by the child).
6. *High* – Mother skillfully provides support throughout the majority of the session. She establishes herself as supportive and encouraging toward the child and provides support when the child needs it. As the child experiences more difficulty, her support increases in commensurate fashion. If the child is having difficulty, she finds ways to structure the problem to reward some sort of success by the child and encourage whatever solution the child can make. She may have minor lapses, but for the most part, she is emotionally supportive and reinforces the child's successes.

6. Mutual Pleasure (summary code)

Dyad's emotional connectedness and shared experience of mutual pleasure.

Codes:

4. *Minimal* – The dyad shows no/minimal signs of a positive emotional connection. There are no shared smiles and there may be no mutual eye contact. Mother and child seem to be hesitant to share positive emotions or seem to be restricting positive emotional expression for some reason (e.g., silently angry). The mother and child show no signs of having fun together.
5. *Moderate* – The dyad shows some signs of positive emotional connection, however, the frequency and degree of positiveness is no more than moderate. Sharing of positive affect occurs, however, it is occasional in frequency, restricted in tone and/or duration, or a combination of these, and/or mother and/or child shows some restriction or hesitancy in sharing emotion. [Code "2" if the dyad is emotionally connected, but one or both members are not having fun; also Code "2" if there are a number of instances where one or both members of the dyad experience discomfort, boredom or frustration]
6. *High* – The dyad shows clear signs of a positive emotional connection, which are positive and enthusiastic in tone and occur regularly throughout the session. The dyad may show frequent mutual eye contact or the dyad may show positive, enthusiastic sharing of positive emotions (e.g., "four-eyed" smiles). Neither the mother nor child shows signs of restricting emotional communication with each other. The mother and child seem to be having fun together. Also code 3 if both mother and child express interest and seem content, and no negativity, discomfort, boredom, or frustration is evident.

7. Body Harmonics (predominant mode)

Rate the predominant mode; rate body orientation, degree of "insynctness" between the parent and child

*Note: For some tasks (e.g., Magna Doodle) parents may be sitting next to or just behind their child, typically in order to both be oriented towards a toy/task, but are engaged in the same task. If this occurs as the predominant mode, code "4".

Codes:
5. Neither mom nor child oriented to the other (similar to parallel play)
6. Child oriented to mom, mom not orientated to child
7. Mom oriented to the child, child not to mom
8. Both oriented towards each other – mom oriented to the child, child to the mom

8. Mother's Mental Status (summary code)

*Note: A code of "2" or "3" does not indicate that the parent is at-risk of a mental illness; a code of "2" indicates that the parent is displaying one or more of the behaviors listed under a "2" or"3."

Do not consider an overall mode of "angry" or "impatience" if mother is using appropriate, firm limit setting in response to a child's inappropriate behaviors (e.g., throwing a toy, breaking a toy, and/or hitting a parent). However, if a parent uses a harsh tone, threatening voice, or threatening words while attempting to discipline/set limits, this *should* be coded here.

Codes:
5. Mother exhibits clear signs of mental distress and/or mental health problems (e.g., depression, hyperactivity, psychotic behavior, mania, etc.)
6. Mother's mood and/or behavior may angry or impatient, but shows no overt signs of mental illness
7. Mother's mood and/or behavior may appear anxious or distressed but shows no overt signs of mental illness
8. No mental distress or psychiatric impairment obvious to the observer

5. Mother's Emotional Response to Task and Situation (summary code)

Codes:
5. *Negative Response* - Overt negative response: bored, irritable, impatient (e.g., Mother says, "this stinks")
6. *Passive Response/Lack of Interest*- Passive or resigned (e.g., "OK, we have to do this"). Clearly no interest or enthusiasm but no overt negativity
7. *Business like* OR *mix of a positive and negative response* – Actively involved, but no positive or negative emotion displayed OR parent displays a mix of

positive (e.g., expresses interest) and negative (e.g., signs of frustration or impatience) emotions.

8. *Positive* - Participates with interest and enthusiasm, and demonstrates occasional pleasure or enjoyment of the toys/task. Positive emotions can include expression of empathy and concern, not just pleasure and personal enjoyment.

6. Touching (<u>circle ANY that apply</u>)

Code parental touch, not child touch – Specifically, if the child reaches out to touch the parent (in a hostile OR affectionate way), this is NOT coded. However, if the parent reciprocates/responds in any way, this should be coded. Tally the frequency of each type of touch.

Codes:

9. No touch/inadvertent touch (e.g., fingers brush as both reach in to get a toy)
10. Hostile touch (pinching, hitting, slapping, tightly gripping)
11. Touching to control (e.g., hold down, direct, lift into a chair, hold down to control an out of control child, hold to control child's movement; if for example the child began hitting themselves, and the parent held both of the child's arms down at their sides to keep them from hurting themselves)
12. Touching to encourage or appropriately prompt/direct child's attention (e.g., tap on shoulder before pointing to an object)
13. Touching to make child attend (e.g., including moving the child's face or putting "blinders" on the child to direct them to make eye contact)
14. Touching to direct by using hand over hand (e.g., parent puts their hand on top of their child's hand and moves the child's hand)
15. Affectionate touch (no seductive overtures; e.g., giving a hug, touching child's hair)
16. Other touch (if you see any other type of touch, code 7 and note what you saw)

7. Denying Emotional Responsiveness (code based on amount of incidents observed)

Coding judgments regarding negative acts by parent/caregiver (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

5. Non occurrence
6. One to two mild-moderate acts
7. <u>Pattern</u> of repeated mild-moderate acts (3 or more instances) or one strong act
8. <u>Pattern</u> of repeated strong acts (2 or more instances) or one extreme act (worse than extreme)

Judge acts, not intentions or consequences. Don't judge on basis of a hypothesis or general point of view you've formed, put down what you see even if there is contradictory evidence (accepting and rejecting behaviors).

Keep tallies for mild/moderate, strong, and extreme behaviors.

*Note: Body posturing is included in this code.

If child makes explicit-direct-overt demands/requests (including affective, cognitive and motor demands and/or requests), a parent who denies emotional responsiveness may respond by ignoring, behaving in detached/uninvolved manner, failing to respond, avoiding interaction, or refusing to interact

If child makes implicit-indirect-covert needs/requests (including affective, cognitive, and motor needs/requests), a parent who denies emotional responsiveness may respond by ignoring, behaving in detached/uninvolved manner, failing to respond, avoiding interaction, or refusing to interact

Additionally, unavailable posturing of parent would discourage a child from seeking a response and would also be considered denying emotional responsiveness.

Examples of this are listed below:
Mild –

- Child says "this is fun" or "this is hard" and Mom shows no response
- Child seems worried (frown, body posture, nervous behaviors) and mother shows little to no response
- Mom attending to child – eye contact and posture – is at low level under conditions where more would be expected
- Mom attending to child, but arms crossed (e.g., if mom crosses her arms in response to child during a critical period or sustained arm crossing or consistently displays this posture throughout the interaction)

Moderate –

- Child says "how do you do this?" or "I don't understand" and must repeat it several times to get a response or takes a while for the parent to respond (i.e., prolonged time before response)
- Child appears very elated/excited or worried/depressed about what she/he's just done or will do next and mother shows little to no response (e.g., Child is very excited about the toys/task and the parent shows little to no response)
- Mom tends *not* to look, touch, or talk to child unless child presses strongly for attention

Strong –

- Child makes requests or asks for help and mom does not respond at all or lets child know child is on his/her own by saying "go on working" or " you figure it out"

- Mom doesn't respond to child's reasonable but non-task oriented requests – "I'm thirsty" or "I want a drink"
- Child visibly shows very strong reaction to situation (e.g., cries, shakes, throws materials down) and mother does not respond
- Mom maintains body orientation and posture away from child's position in an unusual or awkward way that doesn't fit – and other options are available (e.g., Mother actively turns her whole body away or keeps face averted)

Facilitation of Social/Cognitive Development
8. Quality of Instruction/Structure (summary code)

During the free play portion of the session, the mothers scoring *high* on this scale provides support to the child and structure when needed. If the child has difficulties with one of the toys, she provides instructions in a graded, logical, and timely manner. She uses vocabulary that is at the child's level and makes helpful comments when the child is in need. She stimulates the child's educational environment by making comments and elaborations on what the child is doing or feeling (e.g., if the child says, "it's a car" the mom says "yes, it's a blue car").

Codes:

1. *Low- Lack of/poor instructions/structure*. Mother fails to provide adequate structure/instructions. Mother may try to help the child once, but is ineffective and unsuccessful in giving instructions and/or structuring the session. Child may not understand what to do or what is expected of him/her due to lack of instructions/structure. The mother's attempt to structure the child's environment/instructions are uniformly of poor quality. She may be totally uninvolved and/or she may set-up the environment in a poor manner that makes it difficult for the child to successfully play with the toys at hand.
2. *Moderate – Mostly Adequate instructions/structure*. Mother provides adequate structure and instruction during much of the session, but overall, her structure/instruction is not sufficient. Alternatively, the mother may approach the tasks in a way that is very directed/structured, but requires the child to attend primarily to her directives and allows little opportunity for the child to engage the toys. She may provide a mix of good and bad instructions/structure (e.g., attempting to help the child decide what toy to play with while then setting up a game in a way that makes it difficult for the child to have any success).
3. *High – Effective, continuous, and appropriate instructions/structure.* Mother demonstrates characteristics of effective instruction/structure. The tasks are sufficiently structured so that the child understands the objectives and can attempt to solve the problems directly. Mother's assistance is coordinated to the child's activity and needs for assistance. The mother may not need to structure the session or give many instructions if the child understands what is expected of them, but the mother mostly keeps the child's attention and focus on the chosen task and stimulates their educational environment. (e.g., the mother may help the child pick a toy to play with and then help to guide the child through using the toy).

10. **Mother's Respect for Child's Autonomy**

This scale reflects the degree to which the mother acted in a way that recognized and respected the validity of the child's individuality, motives, and perspectives in the session.

A mother scoring *low* on this scale would be very intrusive in her interventions with the child, exerting her expectations on the child in a way that makes the child a satellite or servant of the mother rather than a mutually negotiated relationship, or implicitly defining her interactions in terms of a win-lose power struggle in which compliance by the child makes the mother the winner and the child submissive. Mothers may intrude either harshly or with affection; in either case, her actions do not acknowledge the child's intentions as real or valid and communicate that it is better and safer to depend on her for direction than to attempt individuality.

In contrast, a mother scoring *high* on this scale acknowledges the child's perspectives and desires as a valid part of the child's individual identity. A mother scoring very high does this explicitly by negotiating rules with the child, verbalizing her acknowledgement of the child's intentions, does not deny the child's right to those desires, and models her own identity and the validity of her own desires in the way she expects the child to respect her individuality, too. Note: Mother can get a low score just by denying the child's individuality strongly (e.g., interrupting the child, doing things before the child can on his/her own, etc.) even though it is not interrupting the child's behavior.

Codes:

6. *Very Low* – Mother completely denies the child's individuality in the techniques she uses. Mother may be intrusive, physical, and forceful in controlling the child.
7. *Low* – Mother may deny the child's individuality, but there are a few opportunities for the child to experience autonomy, whether by variation in mother's approach or simply by occasional absence of maternal controls over the child. Mostly, however, this mother's style denies the child's autonomy and mother is intrusive.
8. *Moderate* – Mother is moderately intrusive. Although mother does not deny the child's separate identity, she does very little to support the validity of the child's individuality. She might communicate doubts to the child about the appropriateness of having his/her intentions, or intrude abruptly on the child several times.
9. *Moderately High* – Mother does allow the child some autonomy of intentions, but she does not actively support and reinforce this perspective in the child. She may reflect the child's intentions and ideas by engaging the child, but she also exerts her will at times over the child in a way that shifts the child's perspective.
10. *High* – Mother very clearly interacts with the child in a way that acknowledges the validity of the child's perspective, encourages the child to take the lead/participate

10. Strategies for Maintaining the Child's Task Involvement (predominant mode): This scale reflects the methods used by the mother to encourage and maintain task involvement on the part of the child. The parent's use of verbal reinforcement (positive and negative) is paramount in this item. Parents are rated *higher* when they involve the child in the task and in the enjoyment of the process of working together. They are rated *higher* for more specific praise versus nonspecific praise. They are rated *higher* for using praise versus bribes or threats to engage the child. Parents who have a child who is noncompliant are not automatically rated lower if they respond appropriately by trying other strategies until the child cooperates or they decide that the task cannot be continued.

Rule: If are between 2 codes and you have seen signs of threats, manipulation or coercion in order to promote the child's involvement, code the lower of the 2 codes (even if some positive methods are used).

Codes:

3. *Lack of effort/Threatening* - Parents may receive the lowest score in 2 ways: either little or no effort is made to involve the child in the task OR Physical and verbal threats are used to promote the child's involvement in the task as in, "Do this or else!". Punitiveness is the major strategy for control – the child is coerced to act to avoid unpleasant behaviors by the adult.
4. *Manipulation/Coercion* - Parental bribery or whining the primary strategies used to promote the child's involvement. Rewards not associated directly with the task are given or promised to get the child to participate. Examples: "You'll (We'll) get ice cream if we can finish this game, job, etc.," or parent nags and/or whines until the child complies (e.g., in a whining voice says, "Come on, help me, I want to do this well"). **Note, the parent may use other ineffective strategies, such as intrusive questions or directives, as well, but those are not the only strategies used.

3. *Directives only* - Clarifying, giving information, and directing the task are the methods used to enlist child involvement. No praise, no threats, and no bribes are used. For example, a parent may give step-by-step instructions to a low functioning child, and not threaten or praise either.
4. *Information and non-specific praise* - Clarifying structure and giving information about the task process are used to prompt and enlist the child's involvement, such as, "this goes next," "it's your turn," "look here." Additionally, the parent may use non-specific praise and global feedback to promote the child's involvement in addition to verbal prompts and structuring information. "Good girl," "nice car," and "perfect" are examples of non-specific praise. Alternatively, the parent may demonstrate clear interest (e.g., paying attention to the child, commenting, asking non-intrusive questions, saying "Ohhh" and "Ahhh"), but not give praise. If parent demonstrates clear interest without giving praise, also code this here. In addition, the parent may also ask the child questions or make statements to help maintain their involvement. This item encompasses a parent who uses a variety of different strategies, but no coercive, manipulative, or threatening strategies.
5. *Specific praise* – At *least* one instance of specific praise is observed. The parent provides specific, positive, and well-timed references to the child's effort and

effectiveness are used to get and maintain the involvement of the child. The parent primarily highlights special task qualities of intrinsic interest to the child to stimulate the child's involvement. Mother also provides some verbal prompts and structuring information. Examples include: "Wow, that's so creative to draw a road for the skateboard on the Magna Doodle" or "You are doing such a good job of aiming the ball carefully before you throw the ball to me."

11: Parental Intrusiveness

This scale reflects the degree to which the parent exerts control over the child rather than acting in a way that recognizes and respects the validity of the child's perspective. Intrusive interactions are clearly adult-centered rather than the child-centered. Extreme intrusiveness can be seen as over-control to the point where the child's autonomy is at stake. When unsure whether a behavior is intrusive or not, focus on the *perspective of the child*.

Intrusive behaviors involve imposing the parent's agenda on the child despite signals that a different activity, level or pace of interaction is needed. High arousal, vigorous physical interaction or a rapid pace are not in and of themselves indicative of intrusive over-stimulation - if the child responds positively and is not engaging in defensive behaviors. It is when the child averts his/her gaze, turns away, or expresses negative affect *and the parent continues or escalates* that the behavior is intrusive. Intrusiveness is also apparent when the parent persists in demonstrating a toy to the child long after the child's interest has been gained and the child clearly wants to manipulate the toy him/herself. These parents appear unable to relinquish control of the interaction in order to facilitate the child's exploration or regulation of the activity. Intrusiveness may also be displayed by overwhelming the child with a rapid succession of toys or suggestions, without allowing the child time to react to one before another occurs.

In contrast, a parent scoring low on this scale acknowledges the child's perspective. This parent allows the interaction to be the child-centered rather than adult-centered. The parent modulates her/his behavior in response to the child's interest and enjoyment and allows the child to explore and play at his/her own pace.

Keep in mind that a parent can become involved in the child's play without denying his/her autonomy or being intrusive. In addition, parental actions which are clearly in the child's best interest, such as removing the child from danger are not considered intrusive. Likewise, parental behaviors that are in accordance with protocol instructions, such as bringing the child back to the mat or turning the child toward the camera, will not be judged as intrusive unless the child is handled in a rough or perfunctory manner.

Indicators of Intrusiveness:

- Persisting with an action that clearly does not interest the child (e.g., parent continues with a behavior that makes the child turn away, act defensive, or express negative affect)
- Offering a continuous barrage of stimulation or toys

• Not allowing the child to influence the focus or pace of play
• Not allowing the child to handle toys that he/she reaches for
• Grabbing toys away even though the child is still interested
• Not allowing the child a turn or an opportunity to respond at his/her own pace
• Not allowing the child to make choices
• Poking the child with toys, fingers, or other object(s)

Ratings on this scale should be based on both *quantity* and *quality* of parental behavior.

Parental Intrusiveness Scale:

1. **Low** Intrusiveness. Parent displays no or almost no signs of intrusive behavior. If a few instances of intrusive behavior are observed they are brief and do not unreasonably shift the child's perspective (e.g., slightly abrupt transition from one task to another, briefly taking a toy, or brief magna doodle conflict). Child does not respond defensively in any way to parental behavior.

2. **Moderately** Intrusiveness. Parent displays some intrusiveness. Parent may initiate some interactions with child or offer suggestions to child which are not welcome (e.g., abruptly introducing a new activity/toy when the child is clearly enjoying a different activity/toy), evidenced by child protesting or responding defensively to parent. Or, parent may continue her/his activity after child responds defensively, but parent does not *escalate* the activity (e.g., the parent continues to stir with spoon after the child has pushed the parent's hand away; *NOTE*: *escalating* the behavior would be insisting that the child stir with spoon or *increasing* demands that the child engage in a behavior).

3. **High** Intrusiveness. Parent displays intrusiveness more often than not throughout the session. Parent intrudes abruptly on the child or show intrusiveness at several points in the interaction. The child has few, if any, opportunities to experience autonomy, whether by variation in the parent's approach or simply by occasional absence of parental control.

Psychological Abuse

FOR ALL CODES IN THIS CATEGORY:

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

5. Non occurrence
6. One to two mild-moderate acts
7. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act

8. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Judge acts, not intentions or consequences. Don't judge on basis of a hypothesis or general point of view you've formed, put down what you see even if there is contradictory evidence (accepting and rejecting behaviors).

Keep tallies for mild/moderate, strong, and extreme behaviors.

12. Spurning (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

5. Non occurrence
6. One to two mild-moderate acts
7. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
8. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Active rejecting and/or degrading through words, gestures, and/or other behaviors. Spurning includes, belittling, degrading, and other nonphysical or overly hostile/rejecting treatments used towards a child. Shaming and/or ridiculing a child are also included in this code. Score mother's contempt towards the child here. Do not score appropriate limit setting here (for example, if child is throwing toys or hitting and the parent tells them to calm down or stop their behavior).

Examples:

Mild –

- "Are you frustrated already?"
- "This will be hard for you" (unjustified by situation)
- "I'd better do this part for you" (unjustified by situation)
- Frowning at child's efforts while allowing him/her to continue.
- Mild shaming (publicly teasing). For example, "Make sure you draw all the dirty socks and banana peels you leave in your room" (while child draws on a Magna Doodle)
- Parent may tell the child to stop crying
- Parent may say, "Put a smile on it, honey" when the child looks upset
- Continuing to talk over a child as they try to express an idea (even if the parent is not being mean towards the child). Another way to conceptualize this is to think of the parent "rejecting" their child's idea by not letting the child express their idea.

Moderate –

- "Let me do it, you'll mess it up"

- Makes facial expression of disbelief for child to see as reaction to child's attempt
- Parent tells a child that they are not experiencing a specific emotion (e.g., mother says, "no, you're not sad")

Strong –
- "Keep your hands off – you'll screw it up!"
- "You just watch – we want to do it right"
- "Come on stupid – can't you get it?
- "You're a real loser, aren't you?"
- Laughs mockingly at child's error or attempt
- Shaming. For example, making fun of the child's bedwetting problem
- Parent firmly and repeatedly tells a child to cease displaying a specific emotion
- Parent makes fun of a child for displaying a specific emotion

13. Terrorizing (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

5. Non occurrence
6. One to two mild-moderate acts
7. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
8. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

*Note: Voice quality is included in this code

Key concept: Judge act(s) in regard to its threat or danger to the average child of the target child's development level in the mainstream culture.

Threaten child with violence.
Threatening violence against child's loved ones (other family members) or objects (comfort toys or favorite toys).
Physical attack on/act of violence directed toward child.
Place child in an unpredictable, chaotic, or frightening situation (at the extreme, placing the child in a recognizably dangerous situation).
Examples:

Mild –
- "You'd better behave"
- Abrupt – harsh voice quality (*(not to be confused with a firm loud "No" in a non-harsh tone to stop inappropriate behavior that needs to be terminated right away such as ripping the Lego model , throwing toys)*
- In a harsh voice says, "put that back!"

Moderate –

- "You know what will happen to you if you don't straighten up"
- Tightens body posture and facial expression in threatening and observable manner for child
- Thrusting/pointing index finger toward child to influence behavior

Strong –

- Slams fist down on table
- Menacing gestures made toward child – facial expression, growl, fist shaking
- Grabs child physically and exerts physical pressure in a manner that is too rough and overly controlling
- Threats of physical harm at child such as "I'm going to whip you in a minute."

14. Isolating (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

5. Non occurrence
6. One to two mild-moderate acts
7. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
8. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Physically isolate/confine (confining child or placing unreasonable limitation on freedom of movement)
Socially isolate/confine (placing unreasonable limitations/restrictions on social interactions with peers or adults – this may be done verbally in the session)
Actively terminate communication.
Examples:

Mild –

- Preoccupied with keeping child in seat
- Very little conversation initiated by mother

Moderate –

- Lack of initiation or response - Mom doesn't initiate talk and only talks to child when child initiates conversation (including gestures, tapping, or sound)
- Tries to keep child from communicating with others present (e.g., examiner)
- Tries to keep child from normal movement in his seat while on task

Strong –

- Says "stop talking" or "don't talk while you're working" when the child initiates or attempts to make social contact

- Refuses to allow child freedom to get drink or go to toilet when request/need is expressed with no acceptable rationale given
- Mom is in parallel play mode throughout most of process with little to no interaction or mutually facilitating behavior shown
- Keeps child from contact with others when they enter the room by using own body as shield, by dominating all interactions
- Context seems to demand conversation, and none occurs

15. Corrupting/Exploiting (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

5. Non occurrence
6. One to two mild-moderate acts
7. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
8. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Key Concept: Code based on observations of the parent leading the child away and astray from the task.

Using a child in ways serving the adult, and not the child, or meeting own needs in ways directly interfering with child's attempts to meet his/her needs encouraging or coercing abandonment of developmentally appropriate autonomy, and/or extreme over-involvement
Actively encouraging/teaching anti-social, self-harming, or developmentally inappropriate behavior
Modeling/demonstrating behavior which is anti-social, self-harming, or developmentally incorrect/inappropriate
Allowing child behavior which is anti-social, self-harming, or incorrect/inappropriate
Restricting or interfering with the child's cognitive development.

Examples:

Mild –

- Doesn't help or instruct child if child seems stuck with something (e.g. how to erase the magna doodle).
- Says, "it doesn't matter how we do this, just so we get it done"

Moderate –

- Plays with/manipulates materials in a manner interfering with the child's opportunity to participate or move forward with their play.
- Shows little to no interest in having the child learn throughout the session.
- Seems only interested in getting it over and getting the task done

- Gives child role of "mom's assistant" below child's competency or level of potential for learning by trying
- Allows child (without corrective follow-up) to use foul language or make statements degrading self or others
- Parent takes over and directs the child's activities (e.g., the parent tells the child exactly what to do)
- The parent does not allow the child to come up with his/her own ideas of how to play with the item chosen (e.g., the parent may fire questions/directives at the child in a way that does not allow child to come up with his/her own ideas)
- Limits child's participation to holding tools/parts for mother and mother only allows child to take responsibility for lowest level of task.

Strong –

- Says "this is stupid – let's get it over with"
- Uses strong language that degrades others
- Does not allow the child to choose what to play with
- Encourages child to use foul language, make degrading statements, or engage in other inappropriate behavior (e.g., by smiling or laughing)
- Mother demands a shift in attention to her own topics in a way that hinders the child's development (takes child away from the task) and persists in this shift in attention (e.g., mother insists that the child discuss their babysitter's cell phone habits as the child attempts to play pretend with the toy phone. The mother continues to ask questions and does not allow the child to play with the toy in the way the child wants to)
- Parent interferes with the child's learning and child's experience of the session by interrupting the child and asking/making task-irrelevant questions/comments to the point that it's difficult for the child to think (e.g., as the child is determining where to put a window in their toy house, the parent asks off-topic questions that make it difficult for the child to think)
- Pulls toy/game/material from child's grasp and places in her work area

Child Codes

16. Child Negativity (summary code)

*** Remember, this is child negativity directed at the *caregiver***

Degree to which the child shows anger, dislike, or hostility toward the mother. At the high end, the child is repeatedly and overtly angry during the session and/or at the mother (e.g., forcefully rejecting her ideas, showing angry and resistant expression, pouting, or being unreasonably demanding or critical of her). At the low end, there are neither overt nor covert signs of such anger. Expressions are essentially positive toward mother/within the session whether or not the child is compliant or much involved with the mother.

Rule: If it is unclear if the child is acting negative towards the mother or the task, do not code the behavior here.

Codes:

4. *Positive* (i.e., no signs of negativist towards mother)- Child shows no signs of negativism towards the mother. She/he shows through consistently positive interactions toward the mother that she/he has a truly positive relationship toward the mother/within the session and feels no abiding anger toward the mother/within the session. [Code here if there are no clear negative signs towards the mother, even if no clear positive interactions are evident.]
5. *Mix of negative and positive* - Child shows a mix of negativism and positivism towards the mother. Neither negativism nor positivism is predominant in the interaction; there is a mix of both negative and positive interactions.
6. *Negative towards mother*- Child's anger and negativism are predominant in the interaction between the child and mother. The child is repeatedly and overtly angry and resistant during the interaction. The degree of anger seems so strong that the child cannot disguise it in subtler ways for long, but it repeatedly appears in his/her interactions.

17. Child's Experience of the Session (summary code)

This scale reflects the degree to which the child's experience in the session probably resulted in feelings of success and competence on the tasks and confidence in having a good relationship with his/her mother. This scale reflects a variety of contributions in the child and mother's behavior, which might contribute to the child's experience of session. A child scoring low on this scale might have had many conflicts with his/her mother or might have been dominated or been rejected by the mother in ways that would affect the child's experience of success in the session. A child scoring high on this scale would have been able to work well with the mother *and* to do the tasks successfully with some sense of autonomy in problem-solving through appropriate maternal assistance in the session.

4. *Low* - Child had a very negative experience which probably contributed to lower expectations of his/her own competence, anger at self or mother, rejection by the mother, or intense resistance between mother and child. There was very little in the session to compensate for these negative events. Almost no good or only one good instance of positive experiences in the session.
5. *Moderate* - A mix of positive and negative instances throughout the session. The session may be a moderately negative experience for the child, but overall, neither a success nor a failure experience of the child; *OR* The child seemed to get through the session with success and basically have positive interactions with his/her mother, but there might have been some minor aspects in which the child or mother's contributions may have been deficient in helping the child feel success. For example, the child may have success in the task, but not display a good relationship with their mother, or vice versa.

6. *High* - The child has a very positive experience of doing well on the tasks and having a good relationship with his/her mother. There were very positive interactions between the mother and child, and the child was able to do the tasks with enough help and enough autonomy to experience competence in doing the tasks. Although minor problems in the session might have occurred, the overall effect of the mother and child's interactions was very positive in terms of the child's experience of success and confidence in the relationship. [A child who seems content/happy throughout the session regardless of interactions with their parent (e.g., a child who works independently and does not seem to care if the parent participates), should get coded here.]

18. Child's Level of Engagement in the Task ***(Use stopwatch to calculate percentage of time off task relative to total time counted from exit of Experimenter to return of Experimenter)***

This scale reflects the degree to which the child is engaged in either the task or participating with the mother on the task during the session. Code for child's actual level of engagement with the task not the mother's efforts to keep the child engaged.

5. *No Engagement* - Child shows little or no interest in engaging in the teaching task with the mother and this is consistent throughout the session (less than 25% of the time).
6. *Low Engagement* - Child shows some interest in participating in the task but it's not consistent and child is unengaged or resistant for over half of the time (25-49% of the time).
7. *Moderate Engagement* - Child is engaged in the task for more than half but not all of the session. There are clear moments of disengagement demonstrated by the child (50 to 75% of the time).
8. *High Engagement* - Child is almost continuously engaged in the task – there may be moments where attention wanders but they are brief and intermittent (more than 75% of the time.).

19. Child Engagement of Parent (12/22/16)

This scale reflects the extent to which the child (a) shows, initiates, and/or maintains interaction with the parent and (b) communicates positive regard and/or positive affect to the parent.
At the higher end of the scale, the child expresses sustained positive affect toward parent (i.e., a big smile, laughter, etc.), and frequently looks at and attempts to interact with the parent.

<u>Indicators of Child Engagement:</u>

- Approaching or orienting toward parent
- Looking at, establishing, and/or maintaining eye contact with the parent

- Positively responding to parent's play initiations or suggestions (e.g., imitating parent, accepting toy from parent, following parent=s direction)
- Directing or (at a higher level) sharing positive expressions with parent
- Engaging parent in play or sustaining play initiated by parent (e.g. offering an object, requesting help, turn-taking)

Indicators of Child Disengagement:

- No sharing of affect with parent
- Overt rejection of parents play overtures
- Pushing offered objects away
- Positioning or orienting away from the parent
- Engaging in self-occupied play which excludes the parent
- Ignoring suggestions from parent

The focus of this scale is on the *quantity* (frequency) of occurrences in which the child shares positive affect with parent (i.e., looking at parent, making eye contact and smiling, and other "approach" behaviors) and or percentage of timer engaged cooperatively with the parent. When scoring this scale, keep in mind that the *quality* (intensity) of expression is secondary to the *quantity* of occurrences.

Child Engagement Scale:

1. Very Low Engagement. The child clearly does not attempt to share experiences with parent. Failure to make eye contact with parent when expressing happiness, directing expressions of happiness to the experimenter rather than to the parent, and similar behaviors can be used as evidence that the child attempts little sharing of feelings with parent.

2. Low Engagement. The child has very minor incidents which seem expressive of positive regard toward parent and from which one might infer that some positive feelings are expressed toward her. However, the child largely shows no positive regard toward parent and rarely responds to parent or attempts to engage or sustain play (or cleanup or task involvement) with him/her.

3. Moderate Engagement. The child shares some positive regard/happy expressions with parent and/or makes some attempt to engage or sustain play (or cleanup or task involvement) with parent, but these few and only minor elements of interaction and are not sustained by the child for more than a moment at a time. Likewise, the child may include parent in play (offer a toy, imitate pretend, etc.) or cleanup or the teaching task, but the engagement is not sustained for very long.

4. Moderately High Engagement. The child has one or more periods in which s/he engages the parent by expressing positive regard, sharing happy expressions or by sustaining play (or cleanup or task involvement) with the parent or engaged in sustained

cooperative interaction with the parent. The child expresses positive affect toward and engagement of the parent for at least one portion of the interaction.

5. High Engagement. The child demonstrates a very positive, engaging and sharing relationship toward the parent for a substantial period of the session. Sustained play (or cleanup or task involvement) is accompanied by positive regard toward the parent. The child is consistently engaging of parent and the child's relationship with parent seems very warm and positive for a major portion of the session. There is no ambivalence in the child's expression of feelings toward the parent.

20. Child Aggression Tally (code based on amount of incidents observed)

Tally if the child displayed any verbal or physical aggression.

No symbolic aggression (e.g., eye rolls) will be coded.

Verbal aggression includes yelling at parent or verbal threats (e.g., "I hate you").

Physical aggression includes hitting, pinching, or kicking the parent. Physical aggression also includes throwing objects, throwing objects at the parent, breaking or destroying toys/equipment or using an object to hit the parent. Physical aggression also includes attempts at aggression (for example, if the child attempts to hit their parent, but misses).

Please also note what type of aggression was observed by listing exactly what was seen (i.e., child hit parent with Legos).

NOTES (ANY TIME YOU HAVE A HARD TIME CODING, MAKE A NOTE WHY):

_____

_____

_____

Clean-Up Scoring Sheet (revise 1.9.17)

Participant Code: _____

Rater: _____

Date: _____

During Clean-up (check one): ____ child cleaned up
_____mother cleaned up
_____both mother and child cleaned up
_____neither mother or child cleaned up

Codes

Quality of Emotional Support

31. Mother's Supportive Presence

1 2 3

Comments:

32. Mutual Pleasure

1 2 3

Comments:

33. Body Harmonics

1 2 3 4

Comments:

34. Mother's Mental Status

1 2 3 4

Comments:

35. Mother's Emotional Response to Task and Situation

1 2 3 4

Comments:

36. Parental Touching (circle all that occur and tally total for each type of touch)

0 1 2 3 4 5 6 7

Comments:

37. Denying Emotional Responsiveness

0 1 2 3

Comments:

Tally: Mild/moderate –

Strong –
Extreme –

Facilitation of Social/Cognitive Development

38. Quality of Instruction/Structure

1 2 3

Comments:

39. Strategies for Maintaining Child's Task Involvement

1 2 3 4 5

Comments:

Psychological Abuse

40. Spurning

0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

41. Terrorizing

0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

42. Isolating

0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

43. Corrupting/Exploiting
0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

Child Codes

44. Child Negativity Toward Caregiver
1 2 3

Comments:

45. Child Experience of the Session
1 2 3

Comments:

46. Child's Level of Engagement
1 2 3 4

Comments:

47. Child Aggression Tally

Physical –
Verbal –

Comments:

Code Explanations

Quality of Emotional Support

9. Mother's Supportive Presence (summary code)

A Mother scoring *high* on this scale expresses positive regard and emotional support to the child. This may occur by acknowledging the child's accomplishments on the task or unrelated task the child is doing (e.g., cleaning up the toys), encouraging the child with positive emotional regard (e.g., "you're really good at this," "you are doing a

great job of cleaning up") and various other ways of letting the child know that he/she has her support and confidence to do well in the setting. If the child is having difficulty on the task, the mother is reassuring and calm, providing an affectively positive "secure base" for the child, perhaps leaning closer to the child to give a physical sense of support.

A mother scoring *low* on this scale fails to provide supportive cues. She might be passive, uninvolved, aloof, or otherwise unavailable to the child. She may also appear impatient, as if she feels like the activity is a waste of her time and she rather be doing something else. Such a mother also might give observers the impression that she is more concerned about her own adequacy and how she is presenting to the camera, rather than displaying concern about the child's emotional needs.

A *potential difficulty in scoring this scale* is to discount messages of mothers that seemingly are supportive in verbal content but are contradicted by other aspects of communication (e.g., the mother seems to be performing a supportive role for the camera and not really engaged in what the child is doing or feeling). Signs of such questionable support are: improper timing of support, mismatch of verbal and bodily cues, and failure to have the child's attention in delivering the message. These types of supportive messages would not be weighted highly because such features suggest that the mother's supportive presence is not a 'sincere' aspect of their interaction outside the laboratory setting.

Conversely, the mother may seem more supportive than she appears in this situation because she has approached this task as a test of the child's achievement and has not used as much support as she might have. Yet, the qualitative features of her support would merit a high score.

Codes:

7. *Low* – Mother provides little or no emotional support to the child. The mother may be aloof and/or unavailable. She may also be hostile towards a child who shows he/she is in need of support. If support is displayed, it is minimal and not timed well, either being given when the child does not really need it, or only after the child has become upset. The consistency of this support may be uneven, so as to make the mother unreliable as a supportive presence.
8. *Moderate* – This mother does an adequate job of being available when her child needs support. She may lean closer as the child shows small signs of frustration and praise the child's efforts to show that she is available and supportive, but inconsistency in this style makes her support unreliable as a supportive presence to the child. Additionally, she may have failed to provide support at crucial times in the session (i.e., when support was needed by the child).
9. *High* – Mother skillfully provides support throughout the majority of the session. She establishes herself as supportive and encouraging toward the child and provides support when the child needs it. As the child experiences more difficulty, her support increases in commensurate fashion. If the child is having difficulty, she finds ways to structure the problem to reward some sort of success by the child and encourage whatever solution the child can make. She may have minor lapses, but for the most part, she is emotionally supportive and reinforces the child's successes.

10. Mutual Pleasure (summary code)

Dyad's emotional connectedness and shared experience of mutual pleasure.

Codes:

7. *Minimal* – The dyad shows no/minimal signs of a positive emotional connection. There are no shared smiles and there may be no mutual eye contact. Mother and child seem to be hesitant to share positive emotions or seem to be restricting positive emotional expression for some reason (e.g., silently angry). The mother and child show no signs of having fun together.
8. *Moderate* – The dyad shows some signs of positive emotional connection, however, the frequency and degree of positiveness is no more than moderate. Sharing of positive affect occurs, however, it is occasional in frequency, restricted in tone and/or duration, or a combination of these, and/or mother and/or child shows some restriction or hesitancy in sharing emotion. [Code "2" if the dyad is emotionally connected, but one or both members are not having fun; also Code "2" if there are a number of instances where one or both members of the dyad experience discomfort, boredom or frustration]
9. *High* – The dyad shows clear signs of a positive emotional connection, which are positive and enthusiastic in tone and occur regularly throughout the session. The dyad may show frequent mutual eye contact or the dyad may show positive, enthusiastic sharing of positive emotions (e.g., "four-eyed" smiles). Neither the mother nor child shows signs of restricting emotional communication with each other. The mother and child seem to be having fun together. Also code 3 if both mother and child express interest and seem content, and no negativity, discomfort, boredom, or frustration is evident.

11. Body Harmonics (predominant mode)

Rate the predominant mode; rate body orientation, degree of "insynctness" between the parent and child

*Note: For some tasks parents may be sitting next to or just behind their child, typically in order to both be oriented towards a task, but are engaged in the same task. If this occurs as the predominant mode, code "4".

Codes:

9. Neither mom nor child oriented to the other (similar to parallel play)
10. Child oriented to mom, mom not orientated to child
11. Mom oriented to the child, child not to mom
12. Both oriented towards each other – mom oriented to the child, child to the mom

12. Mother's Mental Status (summary code)

*Note: A code of "2" or "3"does not indicate that the parent is at-risk of a mental illness; a code of "2" indicates that the parent is displaying one or more of the behaviors listed under a "2" or"3."

Do not consider an overall mode of "angry" or "impatience" if mother is using appropriate, firm limit setting in response to a child's inappropriate behaviors (e.g., throwing a toy, breaking a toy, and/or hitting a parent). However, if a parent uses a harsh tone, threatening voice, or threatening words while attempting to discipline/set limits, this *should* be coded here.

Codes:

9. Mother exhibits clear signs of mental distress and/or mental health problems (e.g., depression, hyperactivity, psychotic behavior, mania, etc.)
10. Mother's mood and/or behavior may angry or impatient, but shows no overt signs of mental illness
11. Mother's mood and/or behavior may appear anxious or distressed but shows no overt signs of mental illness
12. No mental distress or psychiatric impairment obvious to the observer

5. Mother's Emotional Response to Task and Situation (summary code)

Codes:

9. *Negative Response* - Overt negative response: bored, irritable, impatient (e.g., Mother says, "this stinks")
10. *Passive Response/Lack of Interest*- Passive or resigned. Putting forth very little effort, not encouraging the child, and not being actively involved (minimal effort put in by parent).
11. *Business like* OR *mix of a positive and negative response* – Parent who is actively involved and keeping the child involved. They may also say "Ok, we have to clean up" or "come on, put the Legos in the bag" but without interest, enthusiasm or pleasure in doing the task with child. Mix will include some positive behaviors mixed in with an impatient or critical tone.
12. *Positive* - Participates with interest and enthusiasm, and demonstrates occasional pleasure or enjoyment of the task. Positive emotions can include expression of empathy and concern, not just pleasure and personal enjoyment.

6. Touching (<u>circle ANY that apply</u>)

Code parental touch, not child touch – Specifically, if the child reaches out to touch the parent (in a hostile OR affectionate way), this is NOT coded. However, if the parent reciprocates/responds in any way, this should be coded. Tally the frequency of each type of touch.

Codes:

17. No touch/inadvertent touch (e.g., fingers brush as both reach in to get a toy)
18. Hostile touch (pinching, hitting, slapping, tightly gripping)

19. Touching to control (e.g., hold down, direct, hold down to control an out of control child, hold to control child's movement; if for example the child began hitting themselves, and the parent held both of the child's arms down at their sides to keep them from hurting themselves)
20. Touching to encourage or appropriately prompt/direct child's attention (e.g., tap on shoulder before pointing to an object)
21. Touching to make child attend (e.g., including moving the child's face or putting "blinders" on the child to direct them to make eye contact)
22. Touching to direct by using hand over hand (e.g., parent puts their hand on top of their child's hand and moves the child's hand)
23. Affectionate touch (no seductive overtures; e.g., giving a hug, touching child's hair)
24. Other touch (if you see any other type of touch, code 7 and note what you saw)

7. **Denying Emotional Responsiveness (code based on amount of incidents observed)**

Coding judgments regarding negative acts by parent/caregiver (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

9. Non occurrence
10. One to two mild-moderate acts
11. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
12. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than extreme)

Judge acts, not intentions or consequences. Don't judge on basis of a hypothesis or general point of view you've formed, put down what you see even if there is contradictory evidence (accepting and rejecting behaviors).

Keep tallies for mild/moderate, strong, and extreme behaviors.

*Note: Body posturing is included in this code.

If child makes explicit-direct-overt demands/requests (including affective, cognitive and motor demands and/or requests), a parent who denies emotional responsiveness may respond by ignoring, behaving in detached/uninvolved manner, failing to respond, avoiding interaction, or refusing to interact

If child makes implicit-indirect-covert needs/requests (including affective, cognitive, and motor needs/requests), a parent who denies emotional responsiveness may respond by ignoring, behaving in detached/uninvolved manner, failing to respond, avoiding interaction, or refusing to interact

Additionally, unavailable posturing of parent would discourage a child from seeking a response and would also be considered denying emotional responsiveness.

Examples of this are listed below:
Mild –

- Child seems worried (frown, body posture, nervous behaviors) and mother shows little to no response
- Mom attending to child – eye contact and posture – is at low level under conditions where more would be expected
- Mom attending to child, but arms crossed (e.g., if mom crosses her arms in response to child during a critical period or sustained arm crossing or consistently displays this posture throughout the interaction)

Moderate –

- Child appears very elated/excited or worried/depressed about what she/he's just done or will do next and mother shows little to no response (e.g., Child is very excited about cleaning up the toys/task and the parent shows little to no response)
- Mom tends *not* to look, touch, or talk to child unless child presses strongly for attention

Strong –

- Child makes requests or asks for help and mom does not respond at all or lets child know child is on his/her own by saying "you do it yourself" or " you figure it out"
- Mom doesn't respond to child's reasonable but non-task oriented requests – "I'm thirsty" or "I want a drink"
- Child visibly shows very strong reaction to situation (e.g., cries, shakes, throws materials down) and mother does not respond
- Mom maintains body orientation and posture away from child's position in an unusual or awkward way that doesn't fit – and other options are available (e.g., Mother actively turns her whole body away or keeps face averted)

Facilitation of Social/Cognitive Development
8. Quality of Instruction/Structure (summary code)

The important features of this rating are how well the mother structures the situation so that the child knows what the task objectives are and receives hints or corrections while attempting to clean-up. These hints or corrections are: a) timely to his/her current focus, b) paced at a rate that allows comprehension and use of each approach/cue, c) graded in logical steps that the child can understand, and d) stated clearly without unnecessary digressions to unrelated phenomena or aspects of the task that might only confuse the child. The mother's approach suggests that she has some sort of plan for how her instructions/structure will help the child. Yet, she is also flexible in her approach and uses alternative strategies or rephrases suggestions when a particular cue is not working, and she coordinates her suggestions to the effort that the child is making to solve the task. Lastly, she keeps the child focused and helps them to attend to the task. If the child

begins to go off task (playing with the toys) she helps to bring the child back to the task at hand (cleaning up).

Codes:

6. *Low- Lack of/poor instructions/structure*. Minimal instructions/structure is given for cleaning up. Most attempts (if any) are ineffective. Child may not understand what to do or what is expected of him/her due to lack of instructions. And/or the mother's attempt to structure the child's environment/instructions are uniformly of poor quality (i.e., poor timing/pace, incomprehensible, no scaffolding, etc.). She is either totally uninvolved or fails to structure the tasks effectively.
7. *Moderate – Adequate instructions/structure*. Mother provides adequate structure and instruction for the child to begin cleaning up, but if a child efforts falter or a child becomes distracted, she either does not provide support for continuous cleaning or provides instructions that are of poor quality (e.g. giving very fast directives).
8. *High – Effective, continuous, and appropriate instructions/structure*. Mother demonstrates most characteristics of effective instruction/structure consistently throughout the session. Her directions are sufficiently structured so that the child understands the objectives and can clean-up the toys. Mother's assistance is coordinated to the child's activity and needs for assistance. For the most part, the mother keeps the child's attention and focus on task.

9. Strategies for Maintaining the Child's Task Involvement (predominant mode): This scale reflects the methods used by the mother to encourage and maintain task involvement on the part of the child. The parent's use of verbal reinforcement (positive and negative) is paramount in this item. Parents are rated *higher* when they involve the child in the task and in the enjoyment of the process of working together. They are rated *higher* for more specific praise versus nonspecific praise. They are rated *higher* for using praise versus bribes or threats to engage the child. Parents who have a child who is noncompliant are not automatically rated lower if they respond appropriately by trying other strategies until the child cooperates or they decide that the task cannot be continued.

Rule: If are between 2 codes and you have seen signs of threats, manipulation or coercion in order to promote the child's involvement, code the lower of the 2 codes (even if some positive methods are used).

Codes:

5. *Lack of effort/Threatening* - Parents may receive the lowest score in 2 ways: either little or no effort is made to involve the child in the task OR Physical and verbal threats are used to promote the child's involvement in the task as in, "Do this or else!". Punitiveness is the major strategy for control – the child is coerced to act to avoid unpleasant behaviors by the adult.
6. *Manipulation/Coercion* - Parental bribery or whining the primary strategies used to promote the child's involvement. Rewards not associated directly with the task are given or promised to get the child to participate. Examples: "You'll (We'll)

get ice cream if we can finish cleaning up.," or parent nags and/or whines until the child complies (e.g., in a whining voice says, "Come on, help me, I want to do this well"). **Note, the parent may use other ineffective strategies, such as intrusive questions or directives, as well, but those are not the only strategies used.

7. *Directives only* - Clarifying, giving information, and directing the task are the methods used to enlist child involvement. No praise, no threats, and no bribes are used. For example, a parent may give step-by-step instructions to a low functioning child, and not threaten or praise either.
8. *Information and non-specific praise* - Clarifying structure and giving information about the task process are used to prompt and enlist the child's involvement, such as, "this goes next," "it's your turn," "look here." Additionally, the parent may use non-specific praise and global feedback to promote the child's involvement in addition to verbal prompts and structuring information. "Good girl," "nice job," and "perfect" are examples of non-specific praise. Alternatively, the parent may demonstrate clear interest (e.g., paying attention to the child, commenting, asking non-intrusive questions, saying "Ohhh" and "Ahhh"), but not give praise. If parent demonstrates clear interest without giving praise, also code this here. In addition, the parent may also ask the child questions or make statements to help maintain their involvement. This item encompasses a parent who uses a variety of different strategies, but no coercive, manipulative, or threatening strategies.
9. *Specific praise* – At *least* one instance of specific praise is observed. The parent provides specific, positive, and well-timed references to the child's effort and effectiveness are used to get and maintain the involvement of the child. The parent primarily highlights special task qualities of intrinsic interest to the child to stimulate the child's involvement. Mother also provides some verbal prompts and structuring information. Examples for clean-up include "You are doing a nice job of putting the Legos back in the bag" or "you're working hard, we'll be done cleaning up soon."

Psychological Abuse

FOR ALL CODES IN THIS CATEGORY:

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

9. Non occurrence
10. One to two mild-moderate acts
11. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
12. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Judge acts, not intentions or consequences. Don't judge on basis of a hypothesis or general point of view you've formed, put down what you see even if there is contradictory evidence (accepting and rejecting behaviors).

Keep tallies for mild/moderate, strong, and extreme behaviors.

10. Spurning (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

9. Non occurrence
10. One to two mild-moderate acts
11. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
12. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Active rejecting and/or degrading through words, gestures, and/or other behaviors. Spurning includes, belittling, degrading, and other nonphysical or overly hostile/rejecting treatments used towards a child. Shaming and/or ridiculing a child are also included in this code. Score mother's contempt towards the child here. Do not score appropriate limit setting here (for example, if child is throwing toys or hitting and the parent tells them to calm down or stop their behavior).

Examples:

Mild –

- "Are you frustrated already?"
- "This will be hard for you" (unjustified by situation)
- "I'd better do this part for you" (unjustified by situation)
- Frowning at child's efforts while allowing him/her to continue.
- Mild shaming (publicly teasing). For example, "Make sure we leave this cleaner than your room at home" (while child cleans up)
- Parent may tell the child to stop crying
- Parent may say, "Put a smile on it, honey" when the child looks upset
- Continuing to talk over a child as they try to express an idea (even if the parent is not being mean towards the child). Another way to conceptualize this is to think of the parent "rejecting" their child's idea by not letting the child express their idea.

Moderate –

- "Let me do it, you'll mess it up"
- Makes facial expression of disbelief for child to see as reaction to child's attempt
- Parent tells a child that they are not experiencing a specific emotion (e.g., mother says, "no, you're not sad")

Strong –

- "Keep your hands off – you'll screw it up!"
- "You just watch – we want to do it right"

- "Come on stupid – can't you get it?
- "You're a real loser, aren't you?"
- Laughs mockingly at child's error or attempt
- Shaming. For example, making fun of the child's bedwetting problem
- Parent firmly and repeatedly tells a child to cease displaying a specific emotion
- Parent makes fun of a child for displaying a specific emotion

11. Terrorizing (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

9. Non occurrence
10. One to two mild-moderate acts
11. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
12. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

*Note: Voice quality is included in this code

Key concept: Judge act(s) in regard to its threat or danger to the average child of the target child's development level in the mainstream culture.

Threaten child with violence.
Threatening violence against child's loved ones (other family members) or objects (comfort toys or favorite toys).
Physical attack on/act of violence directed toward child.
Place child in an unpredictable, chaotic, or frightening situation (at the extreme, placing the child in a recognizably dangerous situation).
Examples:

Mild –

- "You'd better behave"
- Abrupt – harsh voice quality
- In a harsh voice says, "put that back!"

Moderate –

- "You know what will happen to you if you don't straighten up"
- Tightens body posture and facial expression in threatening and observable manner for child
- Thrusting/pointing index finger toward child to influence behavior
- Shouts threats of physical harm at child

Strong –

- Slams fist down on table

- Menacing gestures made toward child – facial expression, growl, fist shaking
- Grabs child physically and exerts physical pressure in a manner that is too rough and overly controlling
- Threats of physical harm at child such as "I'm going to whip you in a minute."

12. Isolating (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

9. Non occurrence
10. One to two mild-moderate acts
11. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
12. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Physically isolate/confine (confining child or placing unreasonable limitation on freedom of movement)
Socially isolate/confine (placing unreasonable limitations/restrictions on social interactions with peers or adults – this may be done verbally in the session)
Actively terminate communication.
Examples:

Mild –

- Very little conversation initiated by mother

Moderate –

- Lack of initiation or response - Mom doesn't initiate talk and only talks to child when child initiates conversation (including gestures, tapping, or sound)
- Tries to keep child from communicating with others present (e.g., examiner)

Strong –

- Says "stop talking" or "don't talk while you're working" when the child initiates or attempts to make social contact
- Refuses to allow child freedom to get drink or go to toilet when request/need is expressed with no acceptable rationale given
- Mom is in parallel play mode throughout most of process with little to no interaction or mutually facilitating behavior shown
- Keeps child from contact with others when they enter the room by using own body as shield, by dominating all interactions
- Context seems to demand conversation, and none occurs

13. Corrupting/Exploiting (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

9. Non occurrence
10. One to two mild-moderate acts
11. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
12. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Key Concept: Code based on observations of the parent leading the child away and astray from the task.

Using a child in ways serving the adult, and not the child, or meeting own needs in ways directly interfering with child's attempts to meet his/her needs encouraging or coercing abandonment of developmentally appropriate autonomy, and/or extreme over-involvement
Actively encouraging/teaching anti-social, self-harming, or developmentally inappropriate behavior
Modeling/demonstrating behavior which is anti-social, self-harming, or developmentally incorrect/inappropriate
Allowing child behavior which is anti-social, self-harming, or incorrect/inappropriate
Restricting or interfering with the child's cognitive development.

Examples:

Mild –

- Says, "it doesn't matter how we do this, just so we get it done"

Moderate –

- Plays with/manipulates materials in a manner interfering with the child's opportunity to clean-up
- Models/demonstrates inefficient or incorrect procedure for cleaning up
- Shows little to no interest in having the child participate in cleanup
- Seems only interested in getting it over and getting the task done
- Allows child (without corrective follow-up) to use foul language or make statements degrading self or others
- The parent does not allow the child to come up with his/her own ideas of how to tackle the task at hand (e.g., the parent may fire questions/directives at the child in a way that does not allow child to come up with his/her own ideas)

Strong –

- Says "this is stupid – let's get it over with"
- Demonstrates/models ways to cheat or avoid responsibility such as encouraging the child to not take responsibility for clean-up saying "just let the teacher clean-up."
-

- Uses strong language that degrades others
- Encourages child to use foul language, make degrading statements, or engage in other inappropriate behavior (e.g., by smiling or laughing)
- Mother demands a shift in attention to her own topics in a way that hinders the child's development (takes child away from the task) and persists in this shift in attention (e.g., mother insists that the child discuss their babysitter's cell phone habits as the child attempts to play pretend with the toy phone. The mother continues to ask questions and does not allow the child clean-up.

Child Codes

14. Child Negativity (summary code)

*** Remember, this is child negativity directed at the *caregiver***

Degree to which the child shows anger, dislike, or hostility toward the mother. At the high end, the child is repeatedly and overtly angry during the session and/or at the mother (e.g., forcefully rejecting her ideas, showing angry and resistant expression, pouting, or being unreasonably demanding or critical of her). At the low end, there are neither overt nor covert signs of such anger. Expressions are essentially positive toward mother/within the session whether or not the child is compliant or much involved with the mother.

Rule: If it is unclear if the child is acting negative towards the mother or the task, do not code the behavior here.

Codes:

7. *Positive* (i.e., no signs of negativist towards mother)- Child shows no signs of negativism towards the mother. She/he shows through consistently positive interactions toward the mother that she/he has a truly positive relationship toward the mother/within the session and feels no abiding anger toward the mother/within the session. [Code here if there are no clear negative signs towards the mother, even if no clear positive interactions are evident.]
8. *Mix of negative and positive* - Child shows a mix of negativism and positivism towards the mother. Neither negativism nor positivism is predominant in the interaction; there is a mix of both negative and positive interactions.
9. *Negative towards mother*- Child's anger and negativism are predominant in the interaction between the child and mother. The child is repeatedly and overtly angry and resistant during the interaction. The degree of anger seems so strong that the child cannot disguise it in subtler ways for long, but it repeatedly appears in his/her interactions.

15. Child's Experience of the Session (summary code)

This scale reflects the degree to which the child's experience in the session probably resulted in feelings of success and competence on the tasks and confidence in having a

good relationship with his/her mother. This scale reflects a variety of contributions in the child and mother's behavior, which might contribute to the child's experience of session. A child scoring low on this scale might have had many conflicts with his/her mother or might have been dominated or been rejected by the mother in ways that would affect the child's experience of success in the session. A child scoring high on this scale would have been able to work well with the mother *and* to do the tasks successfully with some sense of autonomy in problem-solving through appropriate maternal assistance in the session.

7. *Low* - Child had a very negative experience which probably contributed to lower expectations of his/her own competence, anger at self or mother, rejection by the mother, or intense resistance between mother and child. There was very little in the session to compensate for these negative events. Almost no good or only one good instance of positive experiences in the session.
8. *Moderate* - A mix of positive and negative instances throughout the session. The session may be a moderately negative experience for the child, but overall, neither a success nor a failure experience of the child; *OR* The child seemed to get through the session with success and basically have positive interactions with his/her mother, but there might have been some minor aspects in which the child or mother's contributions may have been deficient in helping the child feel success. For example, the child may have success in the task, but not display a good relationship with their mother, or vice versa.
9. *High* - The child has a very positive experience of doing well on the tasks and having a good relationship with his/her mother. There were very positive interactions between the mother and child, and the child was able to do the tasks with enough help and enough autonomy to experience competence in doing the tasks. Although minor problems in the session might have occurred, the overall effect of the mother and child's interactions was very positive in terms of the child's experience of success and confidence in the relationship. [A child who seems content/happy throughout the session regardless of interactions with their parent (e.g., a child who works independently and does not seem to care if the parent participates), should get coded here.]

16. Child's Level of Engagement in the Task

This scale reflects the degree to which the child is engaged in either the task or participating with the mother on the task during the session. Code for child's actual level of engagement with the task not the mother's efforts to keep the child engaged.

9. *No Engagement* - Child shows little or no interest in engaging in the clean-up task with the mother and this is consistent throughout the session (less than 25% of the time).
10. *Low Engagement* - Child shows some interest in participating in the task but it's not consistent and child is unengaged or resistant for over half of the time (25-49% of the time).

11. *Moderate Engagement* - Child is engaged in the task for more than half but not all of the session. There are clear moments of disengagement demonstrated by the child (50 to 75% of the time).
12. *High Engagement* - Child is almost continuously engaged in the task – there may be moments where attention wanders but they are brief and intermittent (more than 75% of the time.).

17. Child Aggression Tally (code based on amount of incidents observed)

Tally if the child displayed any verbal or physical aggression.

No symbolic aggression (e.g., eye rolls) will be coded.

Verbal aggression includes yelling at parent or verbal threats (e.g., "I hate you").

Physical aggression includes hitting, pinching, or kicking the parent. Physical aggression also includes throwing objects, throwing objects at the parent, breaking or destroying toys/equipment or using an object to hit the parent. Physical aggression also includes attempts at aggression (for example, if the child attempts to hit their parent, but misses).

Please also note what type of aggression was observed by listing exactly what was seen (i.e., child hit parent with Legos).

NOTES (ANY TIME YOU HAVE A HARD TIME CODING, MAKE A NOTE WHY):

Appendix G

Additional Descriptive Statistics and Correlations

Table G1

Descriptive Statistics for Psychological Multifactor Care Scale – Autism Spectrum Disorder Adapted Version Observed Parenting and Child Experience

	Min	Max	M	SD
Teaching				
Mother's Supportive Presence (3)	1	3	2.70	.59
Mutual Pleasure (3)	1	3	2.55	.66
Body Harmonics (4)	1	4	3.61	.75
Mother's Mental Status (4)	2	4	3.86	.51
Mother's Emotional Response to Task and Situation (4)	2	4	3.61	.62
Quality of Instruction/Structure (3)	1	3	2.55	.70
Respect for Child's Autonomy (5)	2	5	4.00	.86
Strategies for Maintaining Child's Task Involvement (5)	1	5	3.84	.86
Denying Emotional Responsiveness [a]	0	1	.09	.29
Parental Intrusiveness [a] (3)	1	3	1.11	.39
Spurning [a]	0	2	.14	.41
Terrorizing [a]	0	2	.05	.30
Isolating [a]	0	1	.11	.32
Corrupting/Exploiting [a]	0	1	.07	.26
Child Experience of the Session (3)	1	3	2.50	.70
Child Negativity (3)	1	3	1.24	.48
Child Engagement in the Task (4)	1	4	3.21	1.07
Free Play				
Mother's Supportive Presence (3)	2	3	2.75	.44
Mutual Pleasure (3)	2	3	2.68	.47
Body Harmonics (4)	3	4	3.68	.47
Mother's Mental Status (4)	2	4	3.86	.51
Mother's Emotional Response to Task and Situation (4)	2	4	3.75	.49
Quality of Instruction/Structure (3)	1	3	2.55	.55
Respect for Child's Autonomy (5)	2	5	3.84	.81
Strategies for Maintaining Child's Task Involvement (5)	3	5	4.11	.44
Denying Emotional Responsiveness [a]	0	1	.14	.35
Parental Intrusiveness [a] (3)	1	3	1.50	.70
Spurning [a]	0	1	.05	.21
Terrorizing [a]	0	1	.02	.15
Isolating [a]	0	1	.02	.15

Corrupting/Exploiting [a]	0	2	.23	.52
Child Experience of the Session (3)	1	3	2.68	.52
Child Negativity (3)	1	2	1.25	.44
Child Engagement in the Task (4)	1	4	3.28	1.22
Cleanup				
Mother's Supportive Presence (3)	2	3	2.74	.45
Mutual Pleasure (3)	1	3	2.57	.59
Body Harmonics (4)	3	4	3.83	.38
Mother's Mental Status (4)	4	4	4	0
Mother's Emotional Response to Task and Situation (4)	3	4	3.62	.49
Quality of Instruction/Structure (3)	1	3	2.45	.74
Strategies for Maintaining Child's Task Involvement (5)	0	5	3.76	.96
Denying Emotional Responsiveness [a]	0	3	.12	.50
Spurning [a]	0	1	.07	.26
Terrorizing [a]	0	1	.02	.15
Isolating [a]	0	2	.10	.37
Corrupting/Exploiting [a]	0	0	0	0
Child Experience of the Session (3)	1	3	2.55	.59
Child Negativity (3)	1	3	1.24	.48
Child Engagement in the Task (4)	2	4	3.74	.59

Note. Descriptives are reported based on raw scores before transformations. N=44 for Teaching and Free Play; N= 42 for Cleanup. All positive parenting scales and Intrusiveness begin at 1, and the number in parenthesis represents whether it was a 3-, 4-, or 5-point scale.

[a] Harsh Parenting items, where a higher score indicates higher level of harsh behaviors. Item scales (except Intrusiveness) range from 0 to 3.

Table G2

Mean and Standard Deviation for Observed Parent and Child Variables Across Symptom Presentations

Variable	ASD Only			ASD + Low Verbal Ability			ASD + Elevated Attention Problems			ASD + Low Verbal + Elevated Attention		
	N	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*
Positive Parenting	15	0.92	3.04	6	1.09	2.25	9	-1.59	4.26	8	0.10	3.85
Harsh Parenting	15	-0.35	1.99	6	-0.68	.37	9	0.19	2.49	8	0.25	1.69
Child Negativity	15	1.18	0.31	5	1.07	0.15	9	1.30	0.31	7	1.33	0.51
Child Engagement	15	3.67	0.49	5	3.87	0.18	9	3.00	0.87	7	3.24	0.63

Table G3

Intercorrelations for Primary Study Variables and Related Demographics for Children with ASD Only

Variable	*n*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Attention Problems	25	--												
2. Parenting Stress (PSI-IV SF raw total)	25	.55**	--											
3. Maternal Depression (PHQ-9)	25	.41*	.50*	--										
4. Child Aggression (CBCL)	25	.40*	.50*	.29	--									
5. ASD Severity (ADOS Score)	25	.29	.34	.33	.35	--								
6. Child Communication (Vineland)	23	.15	.13	-.11	-.04	-.49*	--							
7. Child Negativity, overall mean	22	.34	.64**	.46*	.08	.43*	-.25	--						
8. Child Engagement, overall mean	22	-.26	-.39	-.17	-.23	-.17	.06	-.48*	--					
9. Number of Adults in the Home	25	.[c]	.[c]	.[c]	.[c]	.[c]	.[c]	.[c]	.[c]	--				
10. Family Income	24	-.05	.04	-.07	.22	-.02	.15	.03	.04	.[c]	--			
11. Race/Ethnicity (White v. not)	24	-.18	-.04	-.02	.03	-.31	.53*	-.17	.32	.[c]	.26	--		
12. Race/Ethnicity (Hispanic v. not)	24	-.04	.05	-.16	.-.09	.14	-.08	.03	-.15	.[c]	-.26	-.54**	--	
13. Positive Parenting, Overall Mean	23	-.38	-.58**	-.39	-.17	-.33	.22	-.66**	.75**	.[c]	.23	.59**	-.25	--
14. Harsh Parenting, Overall Mean	23	.19	.48*	.23	-.14	.28	-.12	.71**	-.56**	.[c]	-.24	-.40	.18	-.84**

Note: on the PSI-4 SF raw scores of 110 or greater convert to a percentile rank in the high range of total parenting stress, and scores of 114 or greater convert to a percentile rank in the clinical range. On the PHQ-9, scores between 5-9 suggest mild severity, and scores between 10-14 suggest moderate severity of depression symptoms.

[c]Correlation could not be calculated given that at least one variable was constant.

Table G4

Intercorrelations for Primary Study Variables and Related Demographics for Children with ASD and Attentional Problems

Variable	*n*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Attention Problems	20	--												
2. Parenting Stress (PSI-IV SF raw total)	19	.14	--											
3. Maternal Depression (PHQ-9)	19	.17	.62**	--										
4. Child Aggression (CBCL)	19	.49**	.43	.16	--									
5. ASD Severity (ADOS Score)	17	-.09	.31	.19	.06	--								
6. Child Communication (Vineland)	19	-.05	.07	.08	.01	-.14	--							
7. Child Negativity, overall mean	17	-.07	-.12	-.39	.18	.16	-.07	--						
8. Child Engagement, overall mean	17	-.38	.05	.15	-.50	-.14	-.06	-.54*	--					
9. Number of Adults in the Home	20	-.02	-.36	-.44	.05	-.08	.08	.[c]	.[c]	--				
10. Family Income	18	-.20	-.10	-.03	-.65**	-.13	-.21	-.42	.60*	.02	--			
11. Race/Ethnicity (White v. not)	20	-.29	-.24	-.19	-.20	-.35	-.07	-.10	.46	.21	.28	--		
12. Race/Ethnicity (Hispanic v. not)	20	.28	.01	-.01	.60**	.09	.22	.41	-.66**	.15	-.67**	-.59**	--	
13. Positive Parenting, Overall Mean	18	-.49*	.004	.16	-.56*	.19	-.22	-.48	.71**	-.28	.60*	.22	-.62**	--
14. Harsh Parenting, Overall Mean	18	.26	-.14	-.32	.48	-.10	.01	.59*	-.50*	.24	-.45	-.09	.40	-.74**

Note: on the PSI-4 SF raw scores of 110 or greater convert to a percentile rank in the high range of total parenting stress, and scores of 114 or greater convert to a percentile rank in the clinical range. On the PHQ-9, scores between 5-9 suggest mild severity, and scores between 10-14 suggest moderate severity of depression symptoms.

[c]Correlation could not be calculated given that at least one variable was constant.